BTS British Transplantation Society

NHS Blood and Transplant

Yes I donate ORGAN DONATION

Congress Live 2021

24th & 25th February

Abstract Book

Online Event

BTS British Transplantation Society

NHS Blood and Transplant

Yes I donate ORGAN DONATION

Congress Live 2021

24th & 25th February

Online Event

Contents

M1

NK cell spleen tyrosine kinase activation in antibody mediated rejection

Dr Candice Clarke, Dr Maria Prendecki, Dr Stephen McAdoo, Dr Michelle Willicombe, Dr Candice Roufosse, Professor Frederick Tam

Imperial College London, London, United Kingdom

Introduction: Spleen Tyrosine Kinase (SYK) is a cytosolic tyrosine kinase activated downstream of immunoreceptors. Activated SYK contains multiple phosphorylation sites including at the 348 residue which is essential for downstream signalling. Natural Killer (NK) cells are mediators of graft damage in antibody-mediated rejection (AMR) as donor specific antibodies (DSAs) signal through FcγRIIIaR (CD16aR) resulting in cytokine release and cytotoxicity. Evidence suggests that SYK plays a role in signalling in NK cells downstream of CD16aR.

Methods:

- Peripheral blood mononuclear cells (PBMCs) and NK cells were isolated from healthy volunteers (HV) and AMR patients.
- NK cells were pre-incubated with CD16a antibody in the presence of a small molecule SYK inhibitor (R406) or DMSO control, followed by Fc receptor cross-linking.
- Following stimulation; Flow Cytometry, Immunoblotting and ELISA were used to detect SYK and cytokines.
- Immunohistochemistry (IHC) and RNAscope™ for SYK protein and mRNA was carried out on transplant biopsy sections from patients with chronic active AMR (cAMR) and disease controls.

Results

- P-SYK was increased in all PBMC subpopulations in patients with AMR compared to HV; highest P-SYK expression was seen in monocytes and CD16+ NK cells ($P<0.01$; Fig1A).
- Following NK cell stimulation, phosphorylation of SYK could be detected using flow cytometry from 2mins (Fig1B). Immunoblotting confirms the presence of total SYK in both stimulated and unstimulated NK cells but P-SYK only in stimulated cells (Fig1C).
- Phosphorylation of SYK after CD16aR ligation is accompanied by release of IFNγ into supernatant (Fig1B&1D). This could be inhibited by 2μM R406. Flow Cytometry analysis showed a significant increase in intracellular IFNγ following 2 hours stimulation which could be inhibited by R406 (Figure 1E).
- Patients with cAMR had higher levels of SYK protein and mRNA in immune cells present in areas of glomerulitis and peritubular capillaritis (PTC) compared with TCMR and controls (Fig2).

Conclusion: SYK is phosphorylated in peripheral immune cells of patients with AMR and also downstream of the CD16a receptor in NK cells. SYK protein and message can be detected at sites of inflammation in the histopathological lesions of cAMR. SYK inhibition significantly reduces the production and release of NK cell effector cytokines which are important mediators of AMR. Therefore, there may be a role for SYK inhibition in the treatment of patients with AMR.

Figure 1

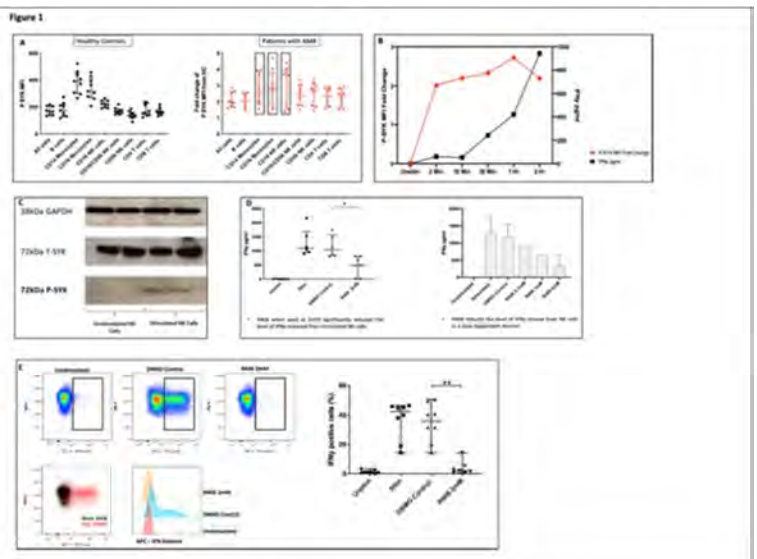


Figure 1:

A: Levels of P-SYK in PBMCs of patients with AMR and Healthy Controls. Higher levels of P-SYK are seen in patient monocyte and CD16 High NK cells. Statistical analysis performed between patient and healthy control MFIs using Mann Whitney test to compare groups **ps0.001.

B: Phosphorylation of SYK after CD16 receptor ligation is accompanied by release of IFNγ into supernatant. Intracellular P-SYK is detected by flow cytometry at 2 minutes post stimulation and peaks at 30 minutes post stimulation. Unstimulated cells do not produce IFNγ. A steady rise in IFNγ was seen between 30 120 minutes post CD16aR ligation.

C: Immunoblot. T-SYK is present in both unstimulated and stimulated NK cells, however stimulation induces expression of P-SYK in NK cells.

D: SYK inhibition (R406) used at 2μM significantly reduced the level of IFNγ released from stimulated NK cells in a dose dependent manner. Statistical analysis by Kruskal Wallis followed by Dunn's multiple comparison test post hoc to compare DMSO and SYK inhibitor *ps0.005.

E: SYK inhibition significantly reduces the detection of NK cell intracellular IFNγ after CD16aR activation. *Statistical analysis by Kruskal Wallis test followed by Dunn's multiple comparison test post hoc to compare DMSO control and SYK inhibitor Ps0.001*

Figure 2

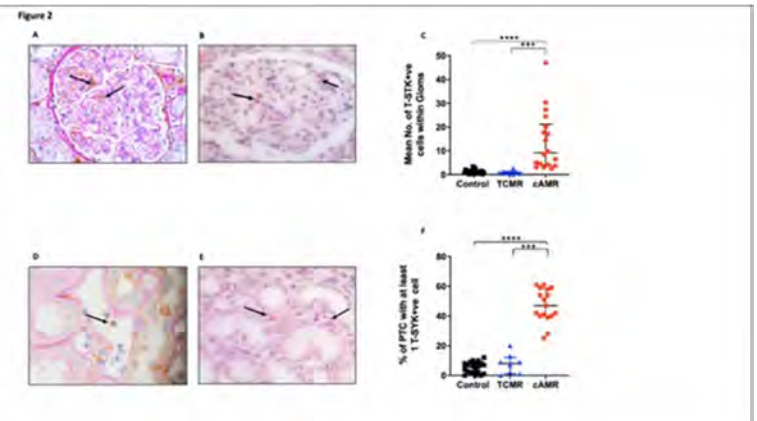


Figure 2:

A: T-SYK positive cells as detected by IHC in Glomerulitis in a patient with cAMR.
B: SYK mRNA as detected by RNA scope in Glomerulitis in a patient with cAMR.
C: Scoring of IHC for SYK protein in glomeruli. Patients with cAMR has significantly more SYK positive cells than TCMR or control patients.
D: T-SYK positive cell as detected by IHC in a Peritubular Capillary in a patient with cAMR.
E: SYK mRNA as detected by RNA scope in Peritubular Capillary in a patient with cAMR.
F: Scoring of IHC for SYK protein in peritubular capillaries. Patients with cAMR has significantly more SYK positive cells than TCMR or control patients.
(**C and F**: Statistical analysis by Kruskal Wallis followed by Dunn's multiple comparison test post hoc to compare groups **** ps0.0001, *** ps0.001).

M2

Survival after liver transplantation: an international comparison between the United States and the United Kingdom and Ireland

Mr David Wallace[1,2], Dr Tommy Ivanics[3], Dr Thomas Cowling[2], Dr Kate Walker[2], Dr Neil Mehta[4], Dr Gonzalo Sapisochin[5], Professor Jan van der Meulen[2], Professor Nigel Heaton[1]

[1]Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom. [2]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom. [3]Multi-organ transplant program, University Health Network, University of Toronto, Toronto, Canada. [4]Division of Gastroenterology, Department of Medicine, University of California, San Francisco, United Kingdom. [5]Multi-organ transplant program, University Health Network, University of Toronto, Toronto, United Kingdom

Introduction: Compared to the US, risk-adjusted mortality in the UK has historically been worse in the first 90-days following liver transplant (LT) but better thereafter. Despite changes in LT practice, no recent international comparison of post-transplant outcome has been conducted. We compared the disease-specific short and long-term mortality of LT recipients in the UK & Ireland with that in the US.

Methods: The UK Transplant Registry and the United Network Organ Sharing Dataset were harmonized and all first-time elective recipients (aged ≥18 years) of a LT between 2008 and 2016 identified. Time-dependent Cox-regression methods were used to estimate hazard ratios (HR) that compared disease-specific risk adjusted mortality between the UK and US in the first 90 days after transplantation, between 90 days and 1-year, and between 1 and 5-years.

Results: 4950 LT recipients from the UK and 42874 from the US were included (Table 1). The main indications for LT in the UK & Ireland and in the US were hepatocellular carcinoma (HCC, 24.9% and 25.4%, respectively) and alcoholic liver disease (ALD, 27.1% and 20.3%). From 0 to 90 days no difference in mortality between the UK & Ireland and the US was observed (comparing the UK with the US, HR; 0.96, 95%CI: 0.82-1.12, p=0.63, Figure 1); however, between 90 days and 1-year (HR; 0.71, 95%CI: 0.59-0.85, p<0.001) and 1 and 5-years (HR; 0.71, 95%CI: 0.63-0.81, p<0.001) the UK was found to have lower mortality. International differences in longer-term survival were most marked in patients with HCC (HR; 0.71, 95%CI: 0.58-0.88, p=0.002) and ALD (HR; 0.64, 95%CI: 0.45-0.89, p<0.001).

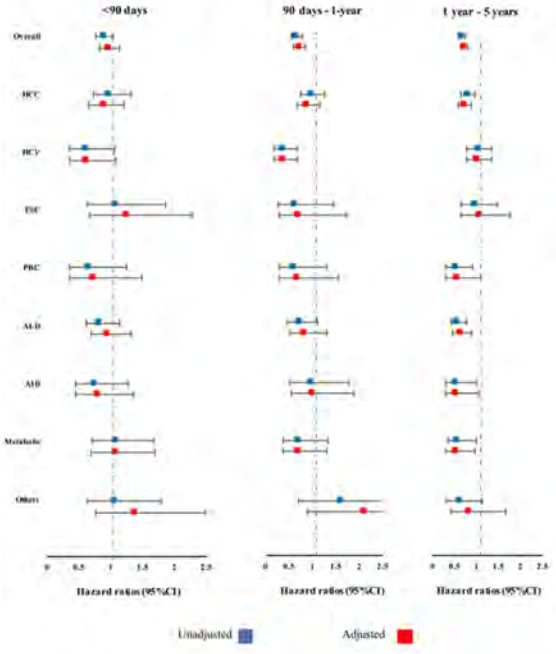
Conclusion: Long-term survival outcomes are superior in the UK& Ireland. International comparisons for LT may highlight differences in health care delivery and help identify modifiable factors that can improve post-LT outcomes.

Table 1: A time-dependent comparison of 5-year patient mortality between the UK & Ireland and US in those receiving a deceased donor liver transplant.

	US COMPARED TO UK & IRELAND HAZARD RATIO (95% CI)			P-VALUE FOR TIME-DEPENDENCY
PRIMARY LIVER DISEASE	**0 – 3 MONTHS**	**3 MONTHS – 1-YEAR**	**1-YEAR to 5-YEARS**	
Overall				
- Unadjusted	0.88 (0.76-1.02)	0.65 (0.55-0.77)	0.66 (0.59-0.74)	0.0068
- Adjusted	0.96 (0.82-1.12)	0.71 (0.59-0.85)	0.71 (0.63-0.81)	0.004
HCC				
- Unadjusted	0.96 (0.71-1.31)	0.96 (0.74-1.24)	0.79 (0.65-0.96)	0.38
- Adjusted	0.88 (0.64-1.21)	0.87 (0.66-1.14)	0.71 (0.58-0.88)	0.35
Hepatitis C				
- Unadjusted	0.60 (0.34-1.06)	0.36 (0.19-0.66)	1.03 (0.78-1.35)	0.002
- Adjusted	0.60 (0.34-1.08)	0.35 (0.19-0.66)	1.01 (0.76-1.35)	0.0006
PSC				
- Unadjusted	1.08 (0.62-1.86)	0.61 (0.25-1.44)	0.96 (0.63-1.48)	0.52
- Adjusted	1.23 (0.67-2.26)	0.69 (0.28-1.72)	1.06 (0.64-1.76)	0.55
Hepatitis B				
- Unadjusted	1.73 (0.60-4.90)	Not enough events (UK)	Not enough events (UK)	N/A
- Adjusted	2.48 (0.72-2.26)	Not enough events (UK)	Not enough events (UK)	N/A
PBC				
- Unadjusted	0.65 (0.35-1.23)	0.60 (0.28-1.30)	0.53 (0.30-0.92)	0.88
- Adjusted	0.72 (0.35-1.49)	0.66 (0.28-1.55)	0.57 (0.30-1.10)	0.86
ALD				
- Unadjusted	0.82 (0.60-1.12)	0.71 (0.46-1.10)	0.56 (0.41-0.77)	0.23
- Adjusted	0.95 (0.68-1.32)	0.82 (0.52-1.29)	0.64 (0.45-0.89)	0.21
AID				
- Unadjusted	0.73 (0.43-1.26)	0.96 (0.52-1.78)	0.53 (0.28-1.00)	0.41
- Adjusted	0.79 (0.44-1.35)	1.00 (0.53-1.89)	0.54 (0.28-1.03)	0.38
Metabolic				
- Unadjusted	1.08 (0.70-1.66)	0.70 (0.37-1.32)	0.57 (0.33-0.99)	0.19
- Adjusted	1.07 (0.68-1.69)	0.68 (0.35-1.30)	0.54 (0.30-0.95)	0.14
Others				
- Unadjusted	1.05 (0.62-1.77)	1.59 (0.70-3.59)	0.61 (0.32-1.13)	0.16
- Adjusted	1.37 (0.75-2.48)	2.12 (0.89-5.07)	0.82 (0.41-1.65)	0.18

** Adjusted for recipient characteristics: sex, age, ethnicity, BMI (Kg/M^2), disease etiology, functional status, ascites, encephalopathy, HCV status, MELD, pre-transplant renal support, previous abdominal surgery.*
***Adjusted for recipient characteristics listed above and donor characteristics: sex, age, BMI (Kg/m^2), cit, donor type (DCD/DBD), cause of death, abomatch, graft type.*

Figure 1: Unadjusted and adjusted HR's (and 95%CI) for mortality in the first 90 days, 90 days to 1-year and beyond the first year in the UK and Ireland (n=4 950) compared with US (n=42 874) by liver disease category.



M3

Brain death specific glomerular matrix degradation profiles are associated with long-term graft dysfunction in kidney transplantation

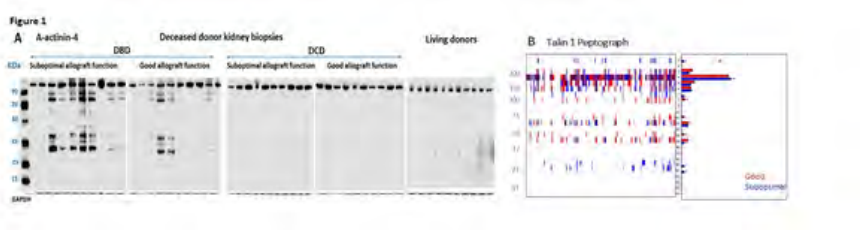
Ms Rebecca Vaughan[1], Professor Benedikt Kessler[2], Professor Gavin Welsh[3], Professor Rikke Norregaard[4], Professor Rutger Ploeg[2,1], Dr Maria Kaisar[2,1]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]University of Oxford, Oxford, United Kingdom. [3]University of Bristol, Bristol, United Kingdom. [4]Aarhus University, Aarhus, Denmark

Introduction: Deceased kidney donation after brain death (DBD) is the main source of transplants, yet these grafts yield inferior transplant outcomes when compared to living donation. In brain-death, cerebral injury contributes to systemic biological dysregulation, causing significant cellular stress in donor kidneys that adversely impacts graft quality. Here, we hypothesised that proteolytic processes in DBD kidneys lead to glomerular damage with subsequent development of post-transplant dysfunction.

Methods: We analysed kidney biopsies from n=55 deceased donors obtained from the QUOD biobank and n=10 living donors from the Oxford Transplant biobank. Using Protein Topography and Migration Analysis Platform (PROTOMAP) we profiled the degradome of DBD pre-implantation biopsies. Distinct proteolytic profiles were further analysed by immunoblotting. To investigate potential mechanisms of kidney cytoskeletal protein degradation, in-vitro human podocytes and ex-vivo precision-cut human kidney slices were employed.

Results: Global profiling of the pre-implantation kidney tissue degradome revealed novel proteolytic patterns of key glomerular cytoskeletal proteins in kidneys that developed long-term allograft dysfunction. From these profiles, seven glomerular proteins were proteolytically altered in donor kidneys with suboptimal posttransplant function (12-mth eGFR<30ml/min). Importantly, these proteolytic events were unique to brain-death and were not observed in circulatory-death or living-donor kidneys. Talin-specific protein degradation (figure 1) in DBD kidneys indicated Calpain-1 activation may have a key role in proteolytic processes observed in dysfunctional kidneys. Investigation of underlying mechanisms suggests that Transforming-Growth Factor-ß (TGF-ß) induces Calpain-1 activation, leading to brain-death specific glomerular degradation patterns and dysregulation of actin cytoskeleton; events that were prevented, in-vitro, by Calpain inhibition.



Discussion: Our data suggest that glomerular protein degradation damages the integrity of the kidney cytoskeleton in DBD donors, impacting posttransplant function. Interplay of TGFß and Calpain-1 may cause proteolysis of Talin-1, revealing novel therapeutic opportunities to prevent kidney dysfunction posttransplant.

M4

Pancreas transplantation in Black, Asian, and Ethnic minority communities - a single center experience

Mr Jeevan Gopal[1], Dr Adam McLean[1], Mr Jeremy Crane[1,2], Mr Frank Dor[1,2], Mr Paul Herbert[1,2], Prof Vassilios Papalois[1,2], Mr Anand Muthusamy[1,2]

[1]Imperial College Renal and Transplant Center, Imperial College Healthcare NHS Trust, Hammersmith Hospital, London, United Kingdom. [2]Department of Surgery and Cancer, Imperial College, London, United Kingdom

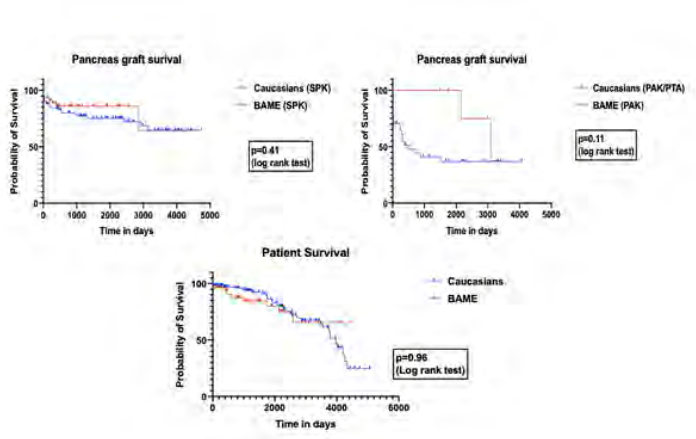
Introduction: It is reported that ethnic disparities in the outcomes after SPK transplantation still exist. The influence of ethnicity on the outcomes of pancreas transplantation in the UK has not been studied. We therefore investigated the influence of ethnicity in patients undergoing pancreas transplantation at our center.

Methods: A retrospective analysis of 171 pancreas transplant (SPK/PAK/PTA/ Re-transplants) recipients (Caucasians=118/ Black Asian Ethnic Minorities, BAME=53) from 2006 to 2020 was done. The median follow-up was 80 months. Patient & graft survival, rejection rate, steroid-free maintenance rate, HbA1C, weight gain & the incidence of secondary complications of diabetes post-transplant were compared between the groups. After Holm-Sidak correction for multiple comparisons, $p < 0.003$ was considered significant. Immunosuppression consisted of alemtuzumab induction and steroid free maintenance with tacrolimus and MMF.

Results: There was no difference between the two groups in terms of donor age, donor BMI, proportion of DCD donors, proportion of sensitised recipients (CRF>5%), HLA mismatches, recipient age and proportion of PAK/PTA. Caucasian recipients had all re-transplants (n=11) & BAME recipients had no PTA. We noted equivalent pancreas graft & patient survival in BAME cohort (Fig 1). BAME group had more prevalence of type-2 DM pre-transplant (BAME=30.19% vs. Caucasians=0.85%, $p<0.0001$), and had similar access to transplantation once waitlisted (Median waiting time, Caucasians=232 days vs. BAME=217 days, $p=0.96$), although, the Caucasian group had a higher percentage of pre-emptive SPK transplantation (Caucasians=78.5% vs. BAME=0.85%, $p<0.0001$). Despite equivalent rejections & steroid usage, BAME recipients gained more weight (Median % weight gain, BAME=7.7% vs. Caucasians=1.8%, $p=0.001$) but had similar HbA1C (functioning grafts) at 3,12, 36- & 60-months post-transplant ($p=0.07$, 0.37, 0.17, and 0.01, respectively). Although not significant, Caucasian recipients had a higher incidence of secondary complications of diabetes post-transplant (Caucasians=33.8% vs. BAME=13.5%, $p=0.04$).

Discussion: BAME & Caucasian recipients had comparable overall patient and pancreas graft survival. BAME patients had a higher proportion of pre-transplant type 2 DM and had similar access to transplantation once waitlisted, although there was a higher proportion of pre-emptive SPK transplantation in the Caucasian patients. Despite equivalent rejections & steroid usage, BAME recipients gained more weight.

Fig 1:


Pancreas graft surival
Probability of Survival
100
50
0
0
1000
2000
3000
4000
5000
Time in days
Caucasians (SPK)
BAME (SPK)
p=0.41
(log rank test)
Pancreas graft survival
Probability of Survival
100
50
0
0
1000
2000
3000
4000
5000
Time in days
Caucasians (PAK/PTA)
BAME (PAK)
p=0.11
(log rank test)
Patient Survival
Probability of Survival
100
50
0
0
2000
4000
6000
Time in days
Caucasians
BAME
p=0.96
(Log rank test)

M5

Global microRNA loss results in accentuated drug response in renal transplant recipients

Ms Katie Connor[1,2,3], Ms Carolynn Cairns[2], Ms Rachel Thomas[1,3], Dr Fiona Duthie[3], Dr Julie Rodor[2], Dr Sarah Finnie[2], Dr John Hung[2], Professor Jeremy Hughes[3], Dr Laura Denby[2], Professor Lorna Marson[3,1], Professor Stephen Wigmore[3,1]

[1]Edinburgh Transplant Unit, Edinburgh, United Kingdom. [2]Centre for Cardiovascular Science, Edinburgh, United Kingdom. [3]Centre for Inflammation Research, Edinburgh, United Kingdom

Introduction: Upregulation of the enzyme heme oxygenase-1 (HO-1) is thought to be protective against ischaemia reperfusion injury. The HOT clinical trial demonstrated HO-1 can be effectively upregulated by heme arginate (HA) when administered to renal transplant (RT) recipients. Interestingly, HO-1 protein response following HA varied significantly between recipients. We hypothesised that negative post-transcriptional regulation by microRNAs, explained individual differences in drug response.

Methods: HOT study RT recipients were given placebo (n=19) or HA (n=21) on D0 (D0=day of transplant) and D2. Patients were categorised as control (CT), high (HR) or low (LR) responders based on the change in D0-D1 peripheral blood mononuclear cell (PBMC) HO-1 protein following intervention. Small RNA-sequencing was performed on D0 and D1 PBMCs, and global microRNA expression characterised using a custom bioinformatic pipeline. HO-1 supressing microRNAs were measured in RT recipients and in a further HA cardiac surgery cohort. Expression of primary and mature microRNAs along with regulators of microRNA biogenesis were investigated.

Results: HR had significantly elevated HO-1 protein response as compared to both LR and CT (-0.12 vs. 0.17 vs. 48.5ng/ml; CT vs. LR vs. HR $p<0.001$). HR demonstrated a loss in global microRNA expression, including microRNAs predicted to suppress HO-1 (Fig 1), but not of other RNAs. MicroRNA loss was evident even at baseline. Focusing on the miR 23a~24-2~27a cluster, which regulates HO-1, these mature microRNAs were significantly downregulated in transplant, but not in cardiac surgery HR to HA. Despite a loss of mature microRNA expression, HR had normal primary microRNA transcript levels, supporting a failure of microRNA biogenesis.

Discussion: Global microRNA loss is associated with an accentuated HO-1 response to HA in a subset of RT recipients. Our work supports a failure of canonical microRNA biogenesis in high responders. These novel findings may explain individual variation in drug response in patients with renal failure.

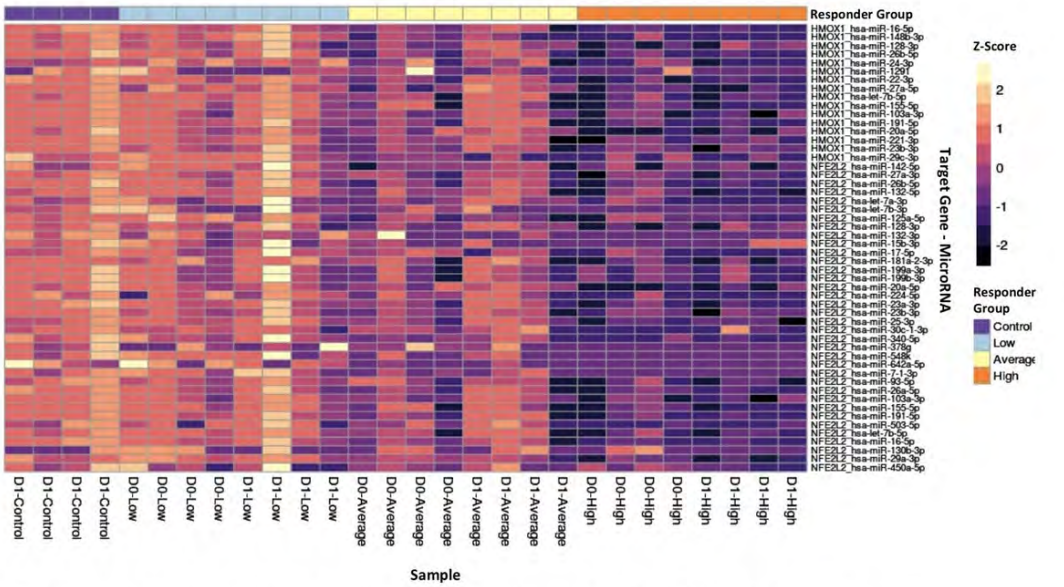


Figure 1: Heatmap demonstrating the reduced expression of miRs predicted to suppress HMOX1/NFE2L2 in high HO-1 responders

M6

Liver transplantation outcomes in elderly patients (≥70 years) in the United Kingdom: a propensity score matched analysis of national registry data

Dr Susanna Lam[1], Dr Ian Rowe[1], Mr Shahid Farid[1,2]

[1]St James's University Hospital, Leeds, United Kingdom. [2]UK Liver Transplant Research Collaborative, Leeds, United Kingdom

Introduction: The ageing population and rising burden of liver disease in the United Kingdom (UK) means liver transplantation (LT) in the elderly will require greater consideration. We present an analysis of short and long-term outcomes of LT in patients ≥70 years in the UK.

Methods: A retrospective analysis of the NHSBT registry including all UK transplant centres of patients > 18 years receiving a LT between 1995-2020 was performed. Patients were divided into those aged <70 or ≥70 yrs. A propensity scored matched (PSM) analysis was also performed. Primary/secondary end points include: indication for transplant, UKELD, type of graft, hospital stay, post-operative complications, graft and patient survival.

Results: A total of 16222 adult transplants recipients were analysed with 16014 (<70 years) and 208 (≥70 years) in each group. After PSM there were 191 patients in each group. Elderly patients were more likely to be transplanted for malignancy, had lower UKELD scores, higher preoperative platelet counts, less encephalopathy and a lower degree of preoperative social and medical support. Elderly recipients received more DCD grafts and donor grafts with advanced age. In PSM analysis of outcomes, there was no difference in perioperative mortality, post-operative complications with the exception of greater postoperative haemorrhage in <70yr group. At 60 months, elderly patients have almost double incidence of renal dysfunction compared to those <70 yrs. In an unmatched and PSM analysis, 1, 5- and 10-year survival between elderly and non-elderly was not significantly different.

Conclusion: Data suggests liver transplantation in the elderly is well selected and, in the UK, achieves comparable outcomes with younger recipients. However, current selection algorithms may exclude many aged over 70 years for LT by utilising outcome metrics applied to younger recipients. This calls for reconsideration of the 'risk' profile of potential elderly candidates to improve transplant access without compromising outcomes.

M7

Ischaemic preconditioning drives expansion of a protective cell population in the renal stroma

Miss Charlotte Brown[1,2], Mr Usman Khalid[1,2], Dr Irina Grigorieva[1], Dr Emma Woods[1], Dr Robert Andrews[3], Dr Gilda Pino-Chavez[1], Dr Robert Steadman[1], Mr Rafael Chavez[1,2], Dr Soma Meran[1]

[1]Wales Kidney Research Unit, Cardiff University, Cardiff, United Kingdom. [2]Cardiff Transplant Unit, University Hospital of Wales, Cardiff, United Kingdom. [3]Systems Immunity URI, School of Medicine, Cardiff University, Cardiff, United Kingdom

Introduction: Ischaemia-reperfusion-injury-(IRI) drives delayed-graft-function-(DGF) and poor graft-survival in kidney transplantation. Ischaemic-Preconditioning-(IPC) is a brief period of ischaemia, which reduces IRI by unknown mechanisms. Delineating mechanisms by which IPC prevents IRI-associated damage could identify new therapies to prevent/limit IRI-associated damage. Hyaluronan-(HA) is a matrix polysaccharide ordinarily undetectable in the renal-cortex but accumulates in pathological states and correlates with poor renal outcomes and is synthesised by the HA synthases (HAS1/2/3). We use a model of evolving kidney injury to characterise cell populations that drive IPC versus IRI and examine the relationship to HA-expression and metabolism in the kidney.

Methods: A rat-model of bilateral kidney IRI was used: Male-Lewis rats (n=81) were assigned to IRI, Sham or IPC. In IRI, renal-pedicles were clamped for 45mins. IPC groups underwent pulsatile-IPC prior to IRI. Kidneys were retrieved at 48-hours, 7-days, 14-days and 28-days and assessed histologically and by RNA-sequencing.

Results: IRI led to marked histological damage. Key inflammatory and fibrotic mediators significantly increased at acute-(48-hours) and chronic-(28-days) timepoints. IPC led to renoprotection with attenuated inflammatory/fibrotic mediators demonstrated at both timepoints. IRI led to increased HA in the renal cortex from 48hrs through-to 28days; whilst this did not occur in sham/IPC animals. Gene-Set-Enrichment-Analysis demonstrated enrichment of HA genes in IRI compared IPC, however HAS1 expression was enhanced in IPC-groups. HAS1 and HAS2 staining were distinct: HAS2 was prominent in IRI in areas of fibrotic damage, whilst HAS1 was prominent in IPC in distinct areas not associated with damage but associated with markers of renal protection (CD44v7/8, GATA3, MCR1).

Discussion: IPC can protect from both acute and chronic IRI damage potentially limiting both DGF and chronic-allograft-nephropathy. IPC facilitates renoprotection through modulation of HA matrix. HAS1 and HAS2 isoenzymes have distinct and likely conflicting roles in this with HAS2 promoting renal damage, whilst HAS1 prevents renal damage and opens future possibilities for stromal-targeted therapies in IRI.

M8

Outcomes of simultaneous pancreas-kidney transplants from donation after circulatory death donors in the UK: a national registry analysis

Dr Maria Ibrahim[1,2], Mr Chris Callaghan[2,1], Ms Claire Counter[1], Mr John Casey[3], Professor Peter Friend[4], Professor Chris Watson[5], Mr Nikolaos Karydis[2]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [3]Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. [4]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom. [5]Department of Surgery, University of Cambridge, Cambridge, United Kingdom

Introduction: The UK is a world leader in the use of pancreases from donation after circulatory death (DCD) donors. However, there is a perception that pancreases from DCD donors are sub-optimal when compared to similar grafts from donation after brain death (DBD) donors. We compared outcomes of pancreases transplanted from controlled DCD donors to those from DBD donors in the largest reported study to date.

Methods: Data were obtained from the UK Transplant Registry on deceased donor adult SPK transplants between 2005 – 2018. Kaplan-Meier estimates were used to compare pancreas, kidney, and patient survivals between those receiving organs from DCD or DBD donors, and multivariable analyses were used to identify factors associated with pancreas graft loss.

Results: 2,228 SPK transplants were implanted (1825 DBD; 403 DCD donors). Kidneys from DCD donors had equivalent graft survivals to those from DBD donors (Figure 1. p=0.99), and there were no differences in longer-term renal allograft function, or in five-year patient survivals when stratifying by donor type. On univariate analysis, there were no significant differences in five-year death-censored pancreas graft survival between the two donor types (Figure 2. 79.5% versus 80.4%; p=0.86). Multivariable analysis showed no significant differences in five-year pancreas graft loss between transplants from DCD (n=343) and DBD (n=1492) donors (hazard ratio 1.26, 95% CI 0.76-1.23; p=0.12). A Cox proportional hazards regression model for pancreas graft loss from DCD donors showed that increasing donor age or pancreas cold ischaemic time (CIT) were not associated with worse outcomes.

Discussion: This large national study supports the increased utilisation of organs from DCD donors in SPK transplantation within the UK and globally. Data on the effect of donor age and CIT on DCD donor graft outcomes suggest that a re-examination of UK donor age criteria and the national pancreas offering scheme are warranted.

Figure 1. Death-censored kidney graft survival for SPK transplant recipients 2005-2018, by donor type (DBD / DCD).

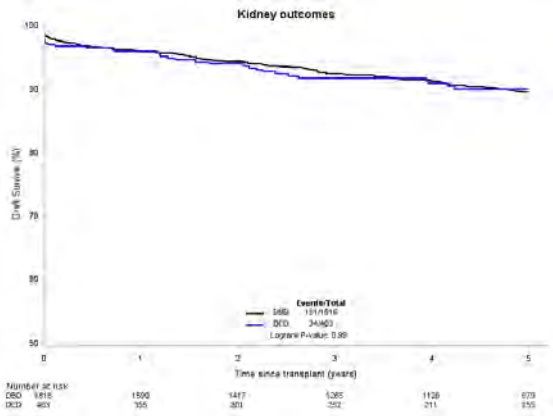
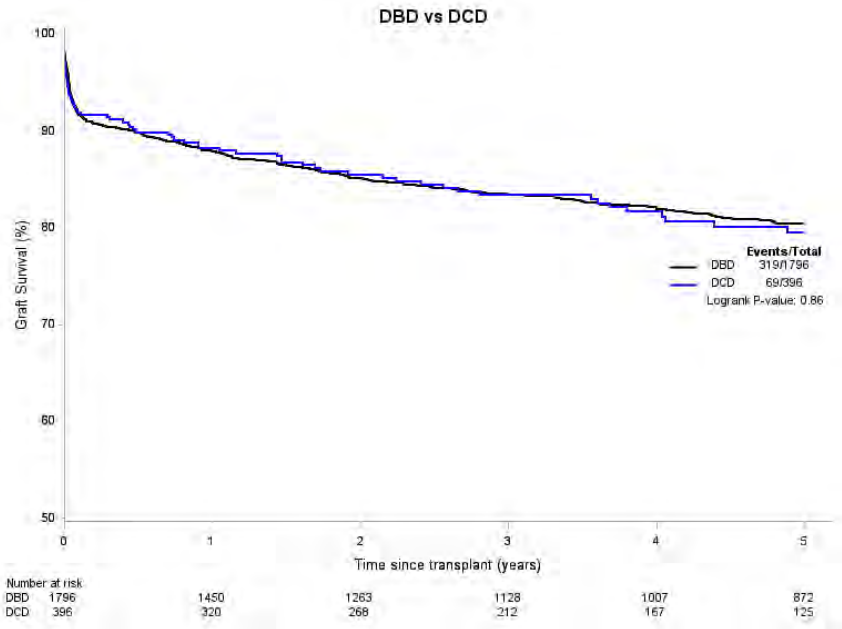


Figure 2. Death-censored pancreas graft survival for SPK transplant recipients 2005-2018, by donor type (DBD / DCD).



CW1

Early liver transplant outcomes after normothermic machine perfusion

Mr Satheesh Iype, Mr David Nasralla, Miss Keziah Crick, Mr Charles Imber, Mr Dinesh Sharma, Prof Brian Davidson, Mr Dimitri Raptis, Prof Joerg Pollok

Royal Free Hospital, London, United Kingdom

Background: There is an apparent increase in utilisation of marginal donor livers after normothermic machine perfusion (NMP). Identifying markers that can reliably predict organ viability during NMP is of intense interest. This study reports the correlation between preoperative donor factors and viability tests on NMP to predict early allograft outcomes.

Methods: All livers that underwent NMP at our institution from August 2014 to August 2020 were included. Donor, recipient, and machine perfusion characteristics were compared and correlated with the post-transplant outcomes to identify those parameters that best predicted the likelihood of developing early allograft dysfunction (EAD).

Results: Of the 108 allografts, perfused on NMP 101 livers (33 DCD; 68 DBD) were transplanted. The median donor age was 46 years and average BMI 27. Median donor peak ALT was 128 (7-3751), donor peak lactate was 2.4 (0.9- 10.9), functional warm ischaemic time in DCD (FWIT) was 24 minutes (17 – 30). Moderate steatosis was observed in 20%. The average cold ischaemia time was 430 minutes and the machine perfusion time was 622 minutes. At the start of NMP mean lactate level 7.3 (5-13.8) was observed, falling to 1.5mmol/L by 4 hours. Median ALT at 1 hour was 572 IU/L for DCD grafts and 1010 IU/L for DBD grafts. Eighteen percent of livers developed EAD after transplantation. The likelihood of EAD correlated with graft steatosis, ALT on NMP at 1 hour >3000, poor lactate clearance in the first four hours and high glucose levels at 4 hours. Ischaemic cholangiopathy (IC) was noted in 6% cases and Overall biliary complications noted in 16% of the cohort, although there was no correlation with bile/ perfusate parameters The incidence of IC and overall biliary complications appeared to be lower compared to a matched cohort of non NMP liver transplants. There were no cases of primary nonfunction. One patient had re-transplantation immediately following graft loss from rupture of multiple subcapsular haematoma.. There was a 4% 90-day mortality following NMP.

Conclusion: Early allograft function can be correlated to the donor factors and perfusate parameters from NMP in both DCD and marginal DBD liver transplants. A lower trend in incidence of biliary complications noted following NMP. There was no correlation with perfusate/bile parameters to biliary complications.

CW2

Combining donor and recipient age with preoperative MELD and UKELD scores for predicting survival after liver transplant

Mr Ioannis D. Kostakis, Mr Satheesh Iype, Mr David Nasralla, Professor Brian R. Davidson, Mr Charles Imber, Mr Dinesh Sharma, Professor Joerg Matthias Pollok

Department of HPB Surgery and Liver Transplantation, Royal Free Hospital, Royal Free London NHS Foundation Trust, London, United Kingdom

Introduction: MELD, UKELD and D-MELD (donor age x MELD) have been assessed as scores for predicting survival after orthotopic liver transplantation (OLT), but with mediocre results. We introduced new indices based on preoperative MELD and UKELD scores, assessed their predictive ability concerning post-OLT survival, and compared it with that of the pre-existing scores.

Methods: We included 1017 OLTs from deceased donors that were performed in our department between 2008 (the year UKELD was introduced) and 2019. Data were collected about donor and recipient characteristics (including MELD and UKELD scores), and transplant characteristics and outcomes. The following scores were calculated: D-MELD, D-UKELD (donor age x UKELD), DR-MELD [(donor age+recipient age)xMELD], DR-UKELD [(donor age+recipient age)xUKELD].

Results: No score had predictive value concerning graft survival. Regarding patient survival, DR-MELD and DR-UKELD provided the best results, but with a low accuracy. The highest accuracy was observed at 1 year post OLT (DR-MELD: AUC: 0.598, 95%CI: 0.529-0.667, DR-UKELD: AUC: 0.609, 95%CI: 0.549-0.67). The addition of donor and recipient age improved the predictive ability of MELD and UKELD scores regarding patient survival significantly, but the addition of donor age alone did not. Based on ROC curves for 1-year mortality, the optimal cut-off points were DR-MELD>2345 and DR-UKELD>5908. Recipients with DR-MELD>2345 had worse patient survival within the first year ($p<0.001$), which remained in the multivariable analysis (HR: 2.263, 95%CI: 1.257-4.074, $p=0.007$). Recipients with DR-UKELD>5908 had worse patient survival within the first year ($p=0.002$), but this did not remain in the multivariable analysis (HR: 1.588, 95%CI: 0.966-2.611, $p=0.068$).

Conclusions: DR-MELD and DR-UKELD scores provide the best, albeit mediocre, predictive ability among the six tested models, especially at 1 year post OLT, but only regarding patient survival and not graft survival. DR-MELD>2345 can be considered an additional independent risk factor for worse recipient survival within the first postoperative year.

CW3

Inferior outcomes in young adults undergoing liver transplantation - a UK cohort study.

Mr David Wallace[1,2], Miss Gillian Briggs[3], Mr Stefan Flasche[4], Dr Kate Walker[2], Dr Thomas Cowling[2], Professor Nigel Heaton[1], Professor Jan van der Meulen[5], Dr Marianne Saymn[1], Dr Deepak Joshi[1]

[1]Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom. [2]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom. [3]Population Health Research Institute, St George's, University of London, London, United Kingdom. [4]Department of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine, London, United Kingdom. [5]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, USA

Introduction: Graft loss following liver transplantation increases the risk of recipient morbidity and mortality. Graft loss incidence is reported to be inversely related to recipient age. We used a national cohort of liver transplant recipients to compare the age-dependent risk of graft failure in different post-transplantation time-periods ('epochs').

Methods: A UK cohort of first-time liver transplant recipients, between 1995 and 2016, were identified. Cox regression was used to estimate hazard ratios (HR) comparing graft loss between age-groups (18-29, 30-39, 40-49, 50-59 and 60-76 years) and graft loss in different post-transplant epochs: 0 to 90 days, 90 days to 2 years, and 2 to 10 years.

Results: 10 864 transplant recipients were included. The risk of graft failure was highest in those transplanted between the ages of 18 and 29, 27.5%, 95%CI: 23.9% - 34.3% (adjusted HR 1.25, 95% CI 1.00-1.57, p=0.04) and in those aged 30-39, 31.3%, 95%CI: 27.5%-35.5% (aHR; 1.31, 95% CI 1.11-1.55, p=0.02). Compared to those aged 50-59, graft failure for those who received a transplant under the age of 40 was the same in the first 90 days after transplantation (ages 30-39; adjusted HR 1.26, 95%CI: 0.96-1.66, p=0.55) but significantly worse between 2 and 10 years' post-transplantation (adjusted HR 1.62, 95%CI: 1.26-2.09, p<0.001). Graft failure due to chronic rejection was more common in recipients aged 18-29 (p<0.001).

Discussion: Adults transplanted between age 18 and 39 are at risk of late graft loss. Chronic rejection is a concern for young adults aged 18-29 years. Our data highlights the need for specialist young adult services within adult healthcare settings.

Figure. 1. Unadjusted 10-year graft survival stratified by age-group (n=10 864).

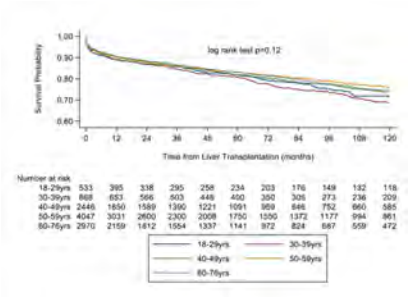


Table 1: Association of age at transplantation with 10-year graft survival sequentially adjusted for donor and then recipient characteristics (n=10 864).

	AGE AT TRANSPLANTATION					
	18-29 years	30-39 years	40-49 years	50-59 years	60-76 years	p-value***
Unadjusted	1.15 (0.94-1.41)	1.26 (1.07-1.48)	1.05 (0.94-1.19)	1	1.02 (0.91-1.14)	**P=0.05**
Adjusted for donor characteristics*	1.24 (1.00-1.52)	1.31 (1.12-1.54)	1.08 (0.96-1.23)	1	1.01 (0.90-1.13)	**P=0.01**
Adjusted for donor and recipient characteristics**	1.25 (1.00-1.57)	1.31 (1.11-1.55)	1.07 (0.95-1.21)	1	1.05 (0.93-1.18)	**P=0.02**

** Adjusted for donor characteristics: sex, age, BMI (Kg/m^2), donor cause of death, donor type (donation after circulatory death or donation after brain death), steatosis, capsular damage, organ appearance, graft type, and cold ischaemic time.*
***Adjusted for donor characteristics listed above and recipient characteristics: sex, ethnicity, BMI (Kg/M^2), functional status, ascites, varices, encephalopathy, HCV status, UKELD, pre-transplant inpatient status, pre-transplant renal support, pre-transplant ventilator status, previous abdominal surgery, disease aetiology and era of transplantation (1995-2008 & 2009-2016).*
**** P-value to determine whether the HR's representing the impact of different age-groups on graft failure differs significantly.*

Table 2: Assessing the time-varying impact of age-group at transplantation on graft survival at 90 days, 2-years and 10 years, adjusted for donor and recipient characteristics (n=10 864).

	AGE AT TRANSPLANTATION					
Epoch of follow-up*	18-29 years	30-39 years	40-49 years	50-59 years	60-76 years	P-value**
0-90 days	1.10 (0.77-1.59)	1.26 (0.96-1.66)	0.94 (0.77-1.15)	1	0.91 (0.75-1.10)	
90 days to 2 years	1.31 (0.83-1.94)	0.96 (0.68-1.37)	1.02 (0.81-1.28)	1	1.07 (0.86-1.33)	
2 years to 10 years	1.36 (0.96-1.93)	1.62 (1.26-2.09)	1.07 (0.86-1.33)	1	1.19 (0.99-1.46)	0.03

**Adjusted for donor characteristics: sex, age, BMI (Kg/m^2), donor cause of death, donor type (donation after circulatory death or donation after brain death), steatosis, capsular damage, organ appearance, graft type, and cold ischaemic time and recipient characteristics: sex, ethnicity, BMI (Kg/M^2), functional status, ascites, varices, encephalopathy, HCV status, UKELD, pre-transplant inpatient status, pre-transplant renal support, pre-transplant ventilator status, previous abdominal surgery, disease aetiology and era of transplantation (1995-2008 & 2009-2016).*
*** Wald test to determine whether the hazard ratios from 0 to 90 days, 90 days to 2-years and 2-years to 10 years differ significantly from each other.*

CW4

Outcomes following liver transplantation in obese recipients in the UK – a study over four decades

Dr Niloufar Safinia[1,2], Dr Leonard Siew[3], Mr Andreas Prachalias[2], Mr Krishna Menon[4]

[1]Institute of Liver Studies, King's College London, London, United Kingdom.[2]King's College Hospital NHS Foundation Trust, London, United Kingdom.[3]Guy's and St Thomas' Healthcare NHS Trust, London, United Kingdom. [4]UK Liver Transplant Research Collaborative, London, United Kingdom

Introduction: Obesity affects more than 60% of adults in the UK, with NASH cirrhosis an increasing indication for liver transplantation. We postulate that obesity affects recipient outcomes with worsening co-morbidity profile post transplantation.

Methods: A retrospective UK-wide study was performed of all patients who underwent liver transplantation between 1980 to 2019. 18,325 patients were included and outcomes of liver transplantation in the obese (n=3,424) and non-obese recipients (n=14,901) compared. Obesity was defined using the WHO criteria. Anonymised data were extracted from National Health Service Blood and Transplant registry.

Results: Patient demographics (obese vs non-obese) included mean age of 53.17±10.77 vs 42.37±19.94 years, male 63.9% vs 56.3%, BMI 33.98±5.01 vs 23.06±4.10 and UKELD 55.06±5.94 vs 54.95±6.21. Obese patients required a longer period of ventilatory support (3.44±0.15 vs 3.85±0.10 days; p=0.025), despite similar ITU stays (6.01±0.22 vs 6.09±0.11 days; p=0.763). There were no differences in postoperative complications, including biliary leak (p=0.343), biliary strictures (p=0.196); or infections including fungal (p=0.721), respiratory (p=0.489), blood (p=0.234), urine (p=0.230) or wound (p=0.567). Patient survival was reduced in the obese cohort (p<0.001)**(Figure 1).** However, no difference was noted in graft survival (p=0.977). Obese recipient survival was significantly reduced following transplantation with a liver from donors after brain death (DBD) (p=0.002), but not from donors after circulatory death, living donor or domino transplants (p=0.142, 0.339 and 0.939 respectively)**(Figure 2).** Obese patients had an increased incidence of renal dysfunction at 12 and 60 months post transplantation (p<0.001 and p=0.002, respectively). A trend of more obese recipients with diabetes was noted (21.7±3.1%, 20.0±1.2%; p=0.602).

Conclusion: Post transplant patient survival is lower in the obese population with significantly lower survival with DBD grafts. Obese patients have worsening co-morbidity profile post liver transplant with deteriorating renal function and diabetes, highlighting the importance of improved management of obesity in the peri-transplant period.

Figure 1

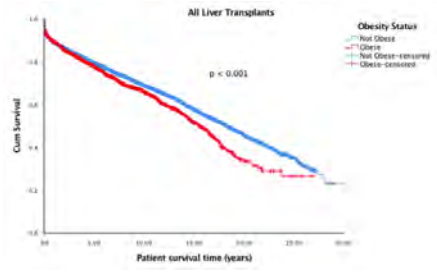


Figure 2

CW5

Transplant benefit score predicts increased pre and post-transplant survival for chronic liver disease patients with hepatocellular carcinoma versus matched patients without: results of a modelling study

Mr Antony Attia[1], Dr Tim Gordon-Walker[2], Mr Ben Stutchfield[2]

[1]University of Edinburgh, Edinburgh, United Kingdom. [2]Edinburgh Transplant Centre, Edinburgh, United Kingdom

Introduction: The Transplant Benefit Score (TBS) facilitates liver allocation across the UK. The TBS calculates the net benefit of transplantation as the difference between the area under the curve (AUC) for predicted pre-transplant survival (Need) and post-transplant survival (Utility) for each waiting list patient. Patients with HCC have a low TBS and rarely receive TBS allocated livers. This study assesses the effect of HCC on TBS. It is well recognised that HCC recurrence post-transplant reduces survival. It was hypothesised that this reduced Utility results in the low TBS for patients with HCC.

Methods: Simulated waiting list patients were generated by varying UKELD, age, and sex. Other TBS parameters remained fixed. The TBS was calculated for each patient +/- a 2cm or 4.9cm HCC. Need and Utility AUCs were recorded. The TBS calculator (transplantbenefit.org) was validated using sample patients. Comparisons made using Wilcoxon signed-rank test.

Results: 50 simulated waiting list patients (male n=27; female n=23) with median age 64 years (IQ range 5.75) and UKELD 55 (IQ range 2.75) were given diagnoses including ALD (n=25) or NAFLD (n=25). The addition of a 2cm HCC significantly lowered TBS by a median of 43% (Figure 1), due to a 209% increase in Need AUC and a 7% increase in Utility AUC. The addition of a 4.9cm HCC (Figure 2) significantly lowered TBS by 25% due to increased Need AUC (132%) and Utility AUC (3%). The change in TBS was most pronounced in 60-70year old patients where median TBS decreased 46% with a 2cm HCC due to a 302% increase in Need AUC and 8% increase in Utility AUC.

Discussion: An additional diagnosis of HCC reduces TBS in patients with chronic liver disease through increased predicted pre-transplant survival. This counter-intuitive effect may limit access to transplant for HCC patients.

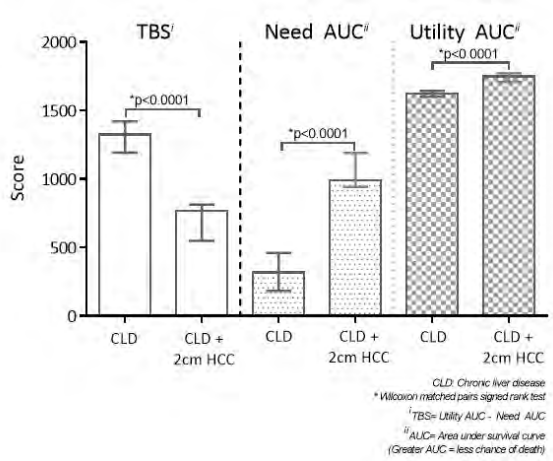


Figure 1. Matched patients -/+ 2cm HCC (Median+/-IQ range)

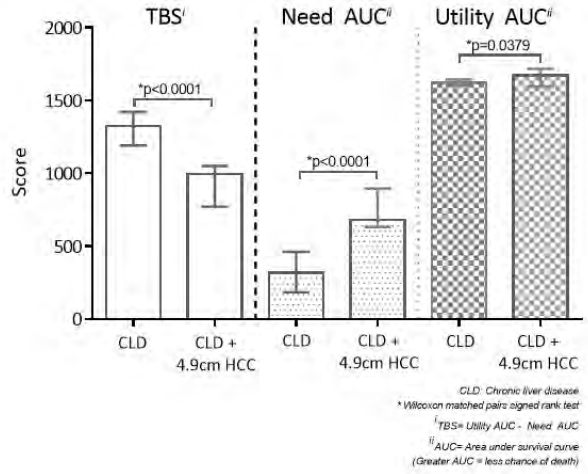


Figure 2. Matched patients -/+ 4.9cm HCC (Median+/-IQ range)

CW6

Liver transplantation for HCC: validation of prognostic power of the RETREAT score for recurrence in a UK cohort

Ms Shruthi H S Reddy[1], Dr Neil Mehta[2], Dr Jennifer Dodge[2], Miss Shirin Elizabeth Khorsandi[1], Mr Wayel Jassem[1], Mr Hector Vilca-Melendez[1], Miss Miriam Cortes-Cerisuelo[1], Mr Parthi Srinivasan[1], Mr Andreas Prachalias[1], Dr Michael Heneghan[1], Dr Varuna Aluvihare[1], Dr Abid Suddle[1], Dr Rosa Miquel[1], Prof Mohammed Rela[3], Prof Nigel Heaton[1], Mr Krishna Menon[1]

[1]King's College Hospital, London, United Kingdom. [2]University of California, San Francisco, USA. [3]Dr Rela Institute & Medical Centre, Chennai, India

Background: Risk Estimation of Tumour Recurrence After Transplant (RETREAT) score is a prognostic score developed and validated for transplants within the Milan criteria in the United States (Table)[1]. We validated the score in an extended criteria UK cohort.

Methods: Transplants between 2008 to 2018 at a high-volume centre for Hepatocellular Carcinoma (HCC) were analysed after excluding mixed/ cholangiocellular differentiated tumours. Predictive factors for recurrence were assessed and survival figures calculated. Survival was also compared by the RETREAT score, which was subsequently validated using Harrel's C-index and Net Reclassification Improvement (NRI) by comparing it to explant Milan.

Results: A total of 368 patients were transplanted of whom 313 were included based on histology. The median waiting-list to transplant time was 3.7 months (IQR 1.6–6.5) and 49 (15.6%) were beyond Milan criteria at transplant. Recurrence was seen in 28 (8.9%) at a median follow-up of 48.2 months (IQR 22–84.3). The sum of total number of tumours with largest size of viable tumour (in cm) ($p=0.04$) and macrovascular invasion ($p<0.001$) were predictors of recurrence on multivariate analysis. There was no difference in recurrence-free survival (RFS) on stratifying the cohort by Milan and UK criteria (log rank $p>0.05$). RFS decreased with increasing RETREAT score (log rank $p=0.016$) (figure). RETREAT performed better than explant Milan (C-index of 0.77, 95% CI 0.70–0.84) for predicting recurrence. The NRI at 1 and 2 years post-transplant was significant at 0.43 ($p=0.004$) and 0.38 ($p=0.03$) respectively.

Discussion: RETREAT score was validated as a prognostic index for the first time in a UK cohort. The score helps in risk stratification that would help guide adjuvant therapies and in setting up a cost-effective surveillance policy.

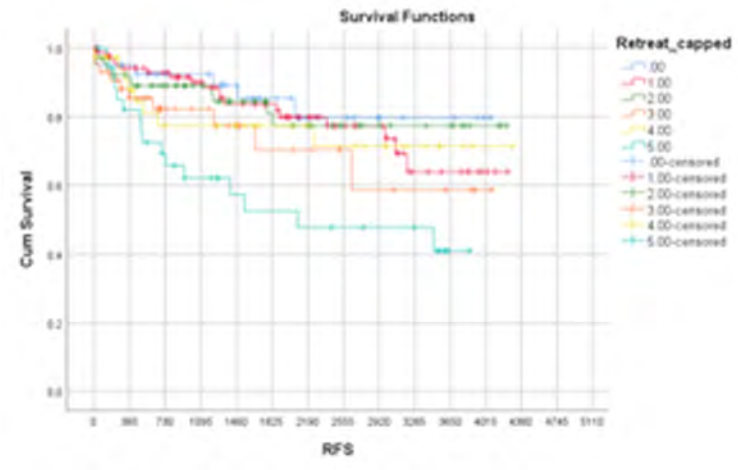
Reference:

- Mehta N et al. Validation of the prognostic power of the RETREAT score for hepatocellular carcinoma recurrence using the UNOS database. Am J Transplant. 2018;18(5):1206-13.

Table: RETREAT score calculation

	Retreat points
AFP at LT (ng/ml)	
0-20	0
21-99	1
100-999	2
≥1000	3
Microvascular Invasion	2
Largest viable Tumour diameter + number of viable lesions	
0 (no viable Tumour on explant)	0
1-4.9	1
5-9.9	2
≥10	3

Figure: RFS stratified by RETREAT score (Log rank p=0.016)



O1

Factors influencing family consent for organ donation in the UK

Rebecca Curtis[1], Dr Alex Manara[2], Susanna Madden[1], Chloe Brown[1], Dr Dale Gardiner[1,3]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]North Bristol NHS Trust, Bristol, United Kingdom. [3]Nottingham University Hospitals NHS Trust, Nottingham, United Kingdom

Introduction: In order to inform best practice and further develop a world class organ donation and transplantation service, analysis has been conducted into the factors influencing family consent for organ donation in the UK. Previous published analysis has now been re-validated with a larger cohort of family approaches (2014-2019). Additional variables available due to changes in data collection have also been considered.

Methods: Factors associated with consent were investigated for eligible approached DBD and DCD donors. Data were analysed using multiple binary logistic regression separately by donor type. Statistical and clinical significance were considered when assessing all variables. This study is one of the largest of its kind, a total of 6060 DBD approaches and 9405 DCD approaches were analysed, and the factors considered are shown in Table 1.

Table 1 – Factors considered
Ethnicity
Nature of patient's prior donation decision
Timing of formal approach
Donation mentioned prior to formal approach
Nature of approach
Unit where referral was made
Number of family members present
Relationship of primary consenter
SNOD present during WLST conversation
Cause of death
Religion
Sex
Did family witness BSD tests?
Was SNOD present for BSD test results conversation?
Socioeconomic category
Age
Financial year
Organ Donation Services Team
Days from critical care admission to approach

Results: The most significant factors found to influence consent remain the same as previous analyses. All influential factors can be grouped into patient factors, which include; age, ethnicity, religion, sex, family factors, and prior donation decision, and process factors, which include; circumstances of approach and other discussions and timing of events.

Discussion: Factors such as prior donation decision, ethnicity, religion, gender, and socioeconomic status, and other family factors which are not modifiable, highlight the need for longer term strategies and publicity in order to change public attitudes. Prior knowledge of modifiable factors will allow for further planning before approaching families to ensure approach happens in the best setting possible. The results of this analysis can be used to produce prediction tools and inform assessment of the influence of deemed consent legislation.

O2

Pediatric heart transplantation following donation after circulatory death, distant retrieval and ex-situ perfusion

Dr. Eyal Ran Nachum[1], Dr. Craig Laurence[2], Dr. Mohamad Osman[1], Dr. John Hogan[1], Ms. Jen Baxter[1], Mr. Richard Quigley[1], Dr. Simon Messer[1], Dr. Stephen Laege[1], Dr. Pradeep Kaul[1], Prof. John Forsythe[3], Ms. Sophie Henwood[2], Dr. Matthew Fenton[2], Dr. Ben Davies[4], Dr. Marius Berman[1,3], Dr, Jacob Simmonds[2]

[1]Department of Transplantation, Royal Papworth Hospital NHS Foundation Trust, Cambridge, United Kingdom. [2]Division of Cardiology, Great Ormond Street Hospital for Children, London, United Kingdom. [3]Organ Donation & Transplantation, NHS Blood and Transplant, Stoke Gifford, Bristol, United Kingdom. [4]Department of Cardiac Surgery, Great Ormond Street Hospital, London, United Kingdom

Introduction: There remains a significant shortage of organs for children listed for heart transplant. This may be ameliorated by controlled donation after circulatory death (DCD), which has proven success in adults. However, there are numerous challenges in retrieval, assessment and transportation of DCD hearts. We report a unique collaboration between 2 centres, combining expertise in DCD organ retrieval and paediatric transplantation.

Methods: All families of children over 20 kg listed for heart transplantation were approached for DCD listing; all consented (n = 20). DCD hearts were obtained by direct retrieval and perfusion, and then mounted, perfused and assessed on an ex-situ cardiac perfusion machine (Organ Care System (OCS), TransMedics, Inc., Andover, MA), before transfer to the implanting unit.

Results: Between 1 Feb and 30 Jun 2020, 5 children received a DCD heart (aged 12 to 16 years; two female). Two had previous cardiac surgery, and none had transpulmonary gradient > 8 mmHg. Donor median age was 19.5 years (15-43); three were male. Donor heart mean functional warm ischaemic time was 25 minutes (22 - 28). Mean travel distance was 150 miles (40-220) and mean ex-situ perfusion time was 266 minutes (192 - 325). Initial arterial lactate on the OCS was 8.8 mmol/l (4.7-11.7) and venous 8.0 mmol/l (4.7 - 10.1); these fell to 4.7 mmol/l (2.2 - 7.4) and 4.4 mmol/L (2 - 7.1) respectively during transport. No recipients required post-operative mechanical support. Median ITU stay was 8 days (7-11) and total hospital stay was 16 days (12 – 21). Pre-discharge echocardiography showed good biventricular function in all recipients except one with mild left and moderate right ventricular dysfunction; all now have excellent graft function. In the same period, 6 DBD transplants were performed in those listed for DCD; although not reaching statistical significance, ventilation, inotrope use, ITU and hospital stay were all shorter in the DCD group.

Conclusion: The use of previously unavailable DCD hearts has increased transplant activity by 83% in children > 20 kg in this early series. By combining the expertise of one unit in organ retrieval using novel technologies with another in paediatric transplantation, all patients had excellent short-term outcomes. Development of the DCD program to include the use of smaller organs is now a priority for both units.

O3

Artificial intelligence driven image analysis to assess donor kidneys at retrieval

Mr Samuel Colenutt[1], Ms Emily Thompson[1,2], Mr Mark Turner[3,1], Mr John Brennan[3], Mr John Asher[4], Mr Colin Wilson[1,2], Ibrahim Khaleel Ibrahim[2], Avinash Sewpaul[5], Figueiredo Rodrgio[5], Vlad Shumeyko[4] Karen Stevenson[4]

[1]Newcastle University, Newcastle Upon Tyne, United Kingdom. [2]Institute of Transplantation - Freeman Hospital, Newcastle Upon Tyne, United Kingdom. [3]National Innovation Centre for Data, Newcastle Upon Tyne, United Kingdom. [4]Queen Elizabeth University Hospital, Glasgow, United Kingdom, [5]Blood and Transplant Research Unit in Organ Donation at Cambridge and Newcastle Universities

Introduction: Organ assessment is currently performed by the retrieval surgeon and based on a subjective visual assessment. Objective assessment by a standardised, trained, artificial intelligence enabled platform would allow accurate outcome statistics to be integrated. The potential immediate effect would also to be improve transplant utilisation and reduce the number of phonecalls in the donation pathway. This study used photographs to train a software algorithm with the ultimate aim of producing a camera software app to score kidneys at the retrieval site.

Methods: Using image manipulation 330 photos of donor kidneys were transformed and separated into *in vivo* and *ex situ*cohorts. The images were assessed by three experts with regards to transplant suitability and flush status. These scored images were then used to train and test six machine learning (ML) models to predict kidney quality. Sensitivity, specificity and accuracy of each model was calculated.

Results: Sensitivities, specificities and accuracies of 100% were reached with regards to transplant suitability in both cohorts of images. The highest sensitivity, specificity and accuracy for flush status was in the *ex vivo* cohort with 99.6%, 99.8% and 99.6% respectively; the *in vivo*models were close behind with 97.8%, 98.8% and 97.4%.

Conclusion: We have demonstrated the ability for artificial intelligence to correctly assess donor kidney quality. Future large scale prospective studies are required to validate the results and connect these scores with outcome data. Ultimately we will be able to offer kidneys to recipients with validated outcome data based on photography and database analysis.

O4

The UK liver transplant program response to COVID-19 pandemic

Steven Masson[1], Rhiannon Taylor[2], Julie Whitney[2], Anya Adair[3], Magdy Attia[4], Paul Gibbs[5], Tassos Grammatikopoulos[6], John Isaac[7], Aileen Marshall[8], Darius Mirza[9], Andreas Prachalias[6], Sarah Watson[10], Derek Manas[1,2], John Forsythe[2], Douglas Thorburn[2,8]

[1]Freeman Hospital, Newcastle, United Kingdom. [2]NHS Blood & Transplant, Bristol, United Kingdom. [3]Royal Infirmary, Edinburgh, United Kingdom. [4]Leeds Teaching Hospitals, Leeds, United Kingdom. [5]Cambridge Universities Hospital Trust, Cambridge, United Kingdom. [6]King's College Hospital, London, United Kingdom. [7]Queen Elizabeth Hospital, Birmingham, United Kingdom. [8]Royal Free Hospital, London, United Kingdom. [9]Birmingham Children's Hospital, Birmingham, United Kingdom. [10]NHS England and NHS Improvement, London, United Kingdom

Introduction: The UK has been severely affected by the COVID-19 pandemic, with consequent challenges to organ donation and transplantation. Here, we describe the co-ordinated UK-wide response during the pandemic 'first wave', across all 7 adult and 3 paediatric liver transplant (LT) centres.

Methods: A series of nationally agreed policy changes affecting many aspects of the liver procurement and transplant process were agreed during regular meetings with LT centre representatives, NHSBT and NHSE. These included liver donor age restrictions and changes to offering. A 'high-urgent' category was established and implemented between 27th March-9th July. Only those with UKELD >60, HCC reaching transplant criteria limits, and others deemed likely to die within 90 days, were prioritised for LT.

Results: During this time, there was a significant fall in the mean number of weekly liver offers (17 from 39), donors (12 from 27) and LT (11 from 18), compared to before the pandemic, with an initial drop of offering by 86% and LT by 84%, before gradual recovery (Fig 1). The proportion of donors retrieved (90% DBD; 31% DCD) and transplanted (90% DBD; 70% DCD) was similar to recent years. In total, 188 LT (157 adults and 31 paediatric) were undertaken. Compared to previous 5 years, paediatric LT was maintained (mean 29); there was a significant reduction in adult (37%) and total (32%) LT. Almost all adult LT (148) were super urgent (n=15) or high urgent (n=133) (Table 1). At the end of July, there was a similar number awaiting LT (556; 540 in 2019) despite a fall in mean monthly new WL registrants (79; 102 in 2019). There was a 50% increase in waitlist registrants being removed due to death/deterioration (54; 36 in 2019).

Discussion: Collaborative and timely decision-making, involving all key stakeholders in UK LT mitigated the impact of the 'first-wave'. The priority is now to provide resilience for future surges, whilst maintaining equity in access to, and excellence in outcomes after LT.

Figure 1 - Number of livers from UK deceased donors offered, retrieved and transplanted, showing time points in changes to donor age restrictions and the liver offering scheme (4th Feb 2020- 9th July 2020)

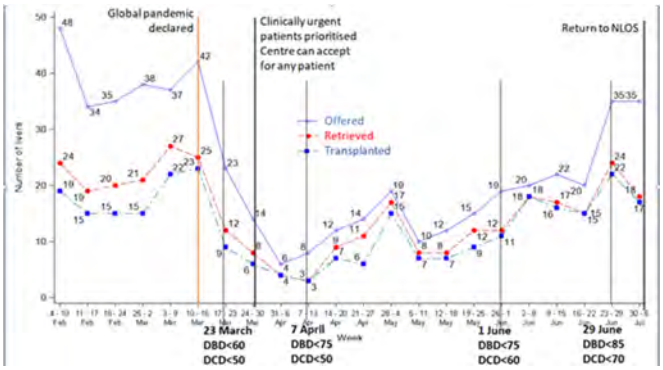


Table 1 - LT undertaken in the UK in the 'first wave' (27th March until 9th July 2020)

Paediatric	**31** (including 6 live donor)	
Adult	**157**	
Super-urgent		**15**
High urgent		**133**
Elective liver only (deceased donor)	CLD	92 median (range) UKELD at transplant 58 (49, 70)
	HCC	19 median (range) number of tumours 1(1,5); median (range) tumour size 2.8cm (1.4, 4.8)
	Re-grafts	17
	Variant syndrome	3
Elective multi-organ (deceased donor)	SLK	1
	Liver and Heart	1
Non-'high-urgent'		**9**
Elective liver only (deceased donor)	CLD	5
	HCC	3
	Variant syndrome	1
Total	**188**	

O5

Re-evaluating transplant organs: organ declines in UK abdominal transplantation

Ms Reena Ravikumar[1], Ms Emily R Thompson[2], Mr Carlo DL Ceresa[3], Ms Gillian Hardman[2], Mr Marcus Taylor[4], Professor John H Dark[2], Professor Stephen J Wigmore[1]

[1]Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. [2]Newcastle Freeman Hospital, Newcastle, United Kingdom. [3]Oxford University Hospitals, Oxford, United Kingdom. [4]University Hospital of South Manchester, Manchester, United Kingdom

Introduction: UK donor utilisation rates for 2019/2020 for the liver, kidney and pancreas were 76%, 80%, 22% for DBD; and 27%, 78%, 16% for DCD respectively. We aimed to understand organ declines in the UK in an effort to adopt strategies to optimise future utilisation.

Methods: An online anonymous questionnaire was sent to all UK adult abdominal transplant consultant surgeons. The questionnaire included five case vignettes of actual donors from 2018-2019 and participants were asked if they would accept or decline the offer, detailing reasons for decline. Questions on surgeon centre, experience and decision-making practices were included.

Results: The overall survey response rate was 62%: 31 liver, 74 kidney, 29 pancreas surgeons. All liver and pancreas transplant units, and 21 of 24 kidney transplant units were represented. Donors used for the simulation had been clinically declined in real-time by at least 4 of the 7 (57%) liver centres and at least 4 of the 8 pancreas centres (50%) on the basis of 'past history'. All kidney donors used for the simulation had been clinically declined in real-time whilst the contralateral kidney had been successfully transplanted. Despite most of these organs being clinical declined, the majority of respondents reported that they would accept the organs in these simulated offers. The decline rates were 14% for the liver, 28% for the kidney and 39% for the pancreas. Most commonly cited reasons for decline were age, alcohol history and BMI for the liver; renal function and social history for the kidney; BMI, girth, alcohol, smoking and DCD for the pancreas.

Discussion: There are clear differences in acceptance rates in the simulation compared to actual decline rates. This translates into a wide variation in decision making. In order to increase organ utilisation, a more standardised approach should be considered, with more robust recording of organ decline reasons to better understand practice.

O6

Suicide in 2020 – its impact on donation and staff wellbeing - the development of education to support communication with families, increase awareness and to provide self-care guidance for health care professionals

Mrs Jenny Hughes[1], Mrs Helen Bentley[2]

[1]NHSBT, Leeds, United Kingdom. [2]NHSBT, Newcastle, United Kingdom

Introduction: NHSBT has received a substantial increase in referrals from suicide since the Covid-19 outbreak. The clear impact of this increased workload is noted across all speciality areas within the NHS. Specialist Requester (SR) and Specialist Nurses-Organ Donation (SNOD) supporting these families and indeed critical care units are subsequently put under additional strain. Grief following suicide is recognised as varying hugely to non suicide grief. SRs and SNODs identified that they required additional skills to enhance care when supporting these families. However, it was also identified that the impact of supporting such families in turn created health and wellbeing concerns for the SRs and SNODs themselves, particularly when the frequency of being exposed to these situations increased. The PDS team were challenged by NHSBT management to recognise and implement a comprehensive and rapidly implemented package of education to meet the needs of the organisation.

Method: An extensive resource review was undertaken, identifying organisations and charities HCP's could signpost families too but also sites, charities and organisations we could refer ourselves to, as staff members. This information was collated and placed upon the internal internet for rapid access to enable prompt and appropriate action for families and NHSBT employees. Sourcing communication strategies proved more difficult, many of the sources immediately found were based upon suicide prevention and much less about strategies which health care professionals (HCP's) can implement when supporting families following suicide. It was recognised by the PDS team that suicide methods and mechanisms had also evolved in recent year with little education around such changes for the SR and SNOD teams, the introduction of suicide resources on the dark web being such an example.

Outcome: The package developed, has emphasis on the differences in suicide grief and the communication skills and nuances required for HCP's. It was expanded to provide SR and SNODS insight to the clinical impact suicide methodology can have on patients and the implications these give for end of life decisions. Small local group sessions were chosen for the delivery, with time and encouragement given to shared practice, optimising learning opportunity for all. Safeguard sessions were implemented, to ensure any attendees who required further debrief opportunity had time and support.

O7

Expedited quality-controlled implementation of a national deceased donor SARS-CoV-2 screening programme in response to a pandemic

Ms Jackie Brander[1], Dr Dale Gardiner[2], Ms Olive McGowan[3], Ms Catherine Slater[4], Ms Emma Billingham[1], Dr Ines Ushiro-Lumb[5]

[1]NHS Blood and Transplant, Birmingham, United Kingdom. [2]NHS Blood and Transplant, Nottingham, United Kingdom. [3]NHS Blood and Transplant, Leeds, United Kingdom. [4]NHS Blood and Transplant, Bristol, United Kingdom. [5]NHS Blood and Transplant, London, United Kingdom

Introduction: SARS-Cov-2 deceased donor screening has become an integral component of deceased donor characterisation. Evidence of a rapidly progressing pandemic required an expedited approach to maintain safety of organ donor recipients and staff.

Methods: A cross directorate working group was formed involving key individuals to ensure safe and expedited implementation of SARS-CoV2 RNA screening for all deceased organ donors in the UK. A robust network of Virology laboratories providing routine organ donor screening enabled the protocol to be rolled out in record time. Negative screening results, detailed donor characterisation combined with expert virology and clinical advice were put in place to support transplant surgeons at the point of organ offering. A thorough quality controlled risk assessed process was established ensuring every deceased organ donor would complete two SARS-CoV-2 screens (1 x Endotracheal Aspirate (ETA) and 1 x Throat and Nose swab). A suite of documented processes was formulated and made available online, including video clip of safe collection of ETA.

Results: The national deceased donor screening programme went live Thursday 19th March, only 8 days after the pandemic declaration by WHO, with support of Clinical Leads for Organ Donation, microbiology laboratories and Specialist Nurses. To the end of September, 813 potential deceased organ donors have been screened for SARS-CoV-2. This along with a detailed COVID-19 risk assessment in addition to the donor's Medical and Social History Questionnaire shared with every transplant centre at the point of organ offering enabled 1645 organs to be transplanted.

Discussion: Cross directorate working and external key stakeholder engagement were essential to the effective implementation of a national enhanced deceased donor screening programme. Pre-donation molecular-based assay results have not been available in the UK pre-pandemic, illustrating the complexity, yet successful introduction at a pace. This initiative was crucial in maintaining the UK deceased donor transplant programme during the pandemic.

O8

Paediatric heart transplantation during the SARS-CoV-2 pandemic in the UK

Ms Angie Scales[1], Ms Chloe Brown[1], Ms Cherry Brown[1], Dr Matthew Fenton[2], Dr Alistair Hustig[2], Ms Sarah-Jane Mead-Regan[2], Dr Reinout Mildner[3,1]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Great Ormond Street, London, United Kingdom. [3]Birmingham Children's Hospital, Birmingham, United Kingdom

Introduction: Paediatric heart transplantation (pHT) pre 2020 was reaching a critical point; with stakeholders proactively addressing shortages of suitable organs and practicalities of the waiting list burden as numbers reached capacity in the two pHT centres. SARS-CoV-2 global impact on donation and transplantation is clear but notably Paediatric Intensive Care Units (PICU) didn't see the impact that was seen in adult ITUs, referral rates remained in line with previous activity; although there was impact on proceeding donation due to closure of transplantation programmes. Transplantation did continue where there was no other medical treatment options. This study seeks to establish factors impacting pHT during SARS-Cov-2.

Method: NHSBT data was extracted to establish the number of cardiac transplants, proceeding donors and mechanism of death in these patients. 27 PICUs and 1 pHT centre where approached to collate their experiences during this period.

Results: Table 1: HT numbers 1 March – 31 August 2019 / 2020

Heart Transplantation	**March 2019 – August 2019**	**March 2020 – August 2020**
Adult Recipients	76 (+5 heart / lung)	75 (+1 heart / lung)
Paediatric Recipients (<16 yrs)	8 (+1 heart / lung)	22 (4 from DCD programme)

Table 2. Proceeding Donors / Mechanism of death ≤ 30 yrs: 1 March – 31 August 2019 / 2020

	2019		**2020**	
	0-15 yrs	**16 -30 yrs**	**0-15 yrs**	**16-30 yrs**
DBD	9	45	8	68
DCD	6	35	11	24
Total consented donors	15	80	19	92
No. proceeding donors where the mechanism of death was self-inflicted	2	36	3	53
Suicides as % of total proceeding donors	40% (n.38)		50.4% (n.56)	

Experience of PICUs during study period;

- PICUs didn't reach capacity
- PICUs / AITUs continued to facilitate donation
- Routine surgery cancelled
- Priority surgery continued

- DCD heart allocation to paediatric recipients commenced
- Public positivity towards NHS
- Law change
- Increase in young donors with a self-inflicted mechanism of death

Discussion: There is evidence that multiple factors contributed to the increase in the pHT during SARS-CoV-2. There was an increase in proceeding donors ≤ 30yrs in 2020 and a greater number of suicides in this cohort. DCD hearts contributed 18% of the total transplanted. Factors such as favourable logistics, availability of resources and sheer determination of professionals to ensure donation and transplantation continued were also key factors in this success for pHT.

O9

Health-related quality of life, uncertainty and coping strategies in solid organ transplant recipients during shielding for the COVID-19 pandemic: results from the COVID-transplant survey

Mrs Siobhan McKay[1,2], Dr Hanns Lembach Jahnsen[1], Dr Angus Hann[1], Mr Kelvin Okoth[3], Dr Laura Magill[3], Dr Barbara Torlinska[4], Dr Matthew Armstrong[1], Mr Jorge Mascaro[5], Mr Nicholas Inston[6], Professor Thomas Pinkney[3], Mr Aaron Ranasinghe[5], Mr Richard Burrows[6], Dr James Ferguson[1], Mr John Isaac[1], Professor Melanie Calvert[4], Mr Thamara Perera[1], Ms Hermien Hartog[1]

[1]The Liver Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom. [2]Department of Academic Surgery, University of Birmingham, Birmingham, United Kingdom. [3]Birmingham Centre for Observational and Prospective Studies (BiCOPS), University of Birmingham, Birmingham, United Kingdom. [4]Centre for Patient Reported Outcomes Research, Institute of Applied Health Research, University of Birmingham, Birmingham, United Kingdom. [5]Cardiothoracic Surgery Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom. [6]Renal Surgery Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom

Introduction: During the first-wave of COVID-19, solid organ transplant (SOT) recipients received advice from Public Health England to shield; meaning to stay at home at all times and socially distance from household members. We investigated patient-reported outcomes for health-related quality of life (HRQoL), uncertainty and coping behaviours in shielded SOT recipients.

Methods: After ethical approval, we conducted a cross-sectional survey of adult SOT recipients at a regional transplant centre. Eligible patients were invited to complete a secure online survey, between 3rd–31st July 2020. Assessment tools were EQ-5D-5L (HRQoL), short-form Mishel uncertainty-in-illness scale, Brief Cope, and a modified version of the World Health Organisation COVID-19 survey tool. EQ-5D-5L scores were compared to age-matched controls from Health Survey England (2017). We used backward stepwise regression models using pre-defined explanatory variables.

Results: 826/3839 recipients completed the survey. The majority were liver transplant recipients (72%), and 20% had a history of mental health illness. EQ-5D-5L index score was significantly poorer for older recipients (>75 years), higher degree of deprivation, being underweight or obese, previous mental health illness, higher levels of uncertainty, having a coping strategy of behavioural disengagement, compromised access to health care during shielding, and perceived severity of infection with COVID-19 (Table 1). Compared to normative data, all EQ-5D-5L domains were significantly poorer for those aged 35-65 years (Table 2). Coping by acceptance, perception of ease to avoid COVID-19 infection, feeling protected, higher perception of susceptibility but lower perception of risk of COVID-19, and increased levels of public trust were associated with lower levels of uncertainty. Several coping strategies (planning, substance abuse, denial, behavioural disengagement) and compromised access to health care and medication significantly increased uncertainty levels (Table 1).

Discussion: Perceptions of susceptibility, risk and severity of COVID-19 infection, coping strategies, and compromised access to healthcare significantly impacted patient-reported HRQoL and uncertainty in shielded SOT recipients.

Table 1: Solid organ transplant recipeints health-related quality of life (EQ-5D-5L), uncertainty, coping behaviours and perceptions of risk during shielding during the COVID-19 pandemic

Variables	EQ-5D-5L index β (Coef)	95% CI	P-value
Age distribution			
18-24 years			
25-34 years	0.03	(-0.07 - 0.13)	0.560
35-44 years	-0.07	(-0.17 - 0.03)	0.194
45-54 years	-0.03	(-0.12 - 0.07)	0.569
55-64 years	-0.08	(-0.18 - 0.01)	0.081
65-74 years	-0.05	(-0.15 - 0.04)	0.275
>75 years	-0.12	(-0.22 - -0.01)	0.031
Sex			
Female			
Male	-0.01	(-0.03 - 0.02)	0.543
Ethnicity			
White			
BAME	0.02	(-0.03 - 0.07)	0.499
Prefer not to answer	0.07	(-0.08 - 0.21)	0.372
Index of multiple deprivation Quintile			
1			
2	-0.01	(-0.05 - 0.04)	0.805
3	0.05	(0.00 - 0.10)	0.025
4	0.05	(-0.00 - 0.09)	0.046
5	0.06	(0.02 - 0.10)	0.004
Missing	-0.01	(-0.06 - 0.04)	0.656
Body mass index			
Normal weight			
Underweight	-0.11	(-0.21 - -0.01)	0.029
Overweight	0.00	(-0.03 - 0.03)	0.971
Obese	-0.05	(-0.09 - -0.02)	0.002
Missing	-0.03	(-0.08 - 0.02)	0.205
Self-reported comorbidities			
End stage renal failure (Dialysis)	0.23	(0.09 - 0.38)	0.002
Ischaemic Heart Disease	0.05	(0.00 - 0.09)	0.042
Chronic Obstructive Respiratory Disease	0.03	(0.01 - 0.05)	0.007
Mental Health (Yes)	-0.13	(-0.17 - -0.10)	<0.001
Mental Health (Unsure)	-0.06	(-0.12 - 0.00)	0.060
Components of shielding			
Followed shielding recommendations (Missing)	-0.17	(-0.30 - -0.04)	0.012
Staying at home	0.03	(0.01 - 0.06)	0.020
Avoid contact with symptomatic people	0.09	(-0.01 - 0.19)	0.065
Uncertainity			
Mishel Score (SF-MUIS)	-0.01	(-0.01 - -0.01)	<0.001
Brief COPE - coping strategies			
Self-distraction	0.02	(0.00 - 0.04)	0.010
Self-blame	-0.02	(-0.05 - -0.00)	0.070
Positive reframing	0.02	(0.00 - 0.04)	0.015
Disengagement	-0.09	(-0.11 - -0.06)	<0.001
Instrumental support	-0.02	(-0.03 - 0.00)	0.059
Perceptions			
Access to health care compromised	-0.06	(-0.09 - -0.03)	<0.001
Safe access to local hospital	0.05	(0.03 - 0.08)	<0.001
Trust in Doctor/GP	< -0.01	(-0.00 - -0.00)	0.043
Trust in local hospital	<0.01	(0.00 - 0.00)	0.006
High perceived risk of severe COVID-19 infection?	<-0.01	(-0.00 - -0.00)	<0.001

Table 2: Health-related quality of life in shielded solid organ transplant (SOT) recipients compared to UK population control group (using EQ-5D-5L)

EQ-5D-5L Domains	18-24 years SOT Recipients	18-24 years UK Control Group*	18-24 years p-value	25-34 years SOT Recipients	25-34 years UK Control Group*	25-34 years p-value	35-44 years SOT Recipients	35-44 years UK Control Group*	35-44 years p-value	45-54 years SOT Recipients	45-54 years UK Control Group*	45-54 years p-value	55-64 years SOT Recipients	55-64 years UK Control Group*	55-64 years p-value	65-74 years SOT Recipients	65-74 years UK Control Group*	65-74 years p-value	>75 years SOT Recipients	>75 years UK Control Group*	>75 years p-value
	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Mobility																					
No problems walking about	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Slight problems walking about	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Moderate problems walking about	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Severe problems walking about	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Unable to walk about	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Self care																					
No problems washing or dressing	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Slight problems washing or dressing	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Moderate problems washing or dressing	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Severe problems washing or dressing	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Unable to wash or dress self	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Usual activities																					
No problems doing usual activities	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Slight problems doing usual activities	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Moderate problems doing usual activities	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Severe problems doing usual activities	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Unable to do usual activities	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Pain and discomfort																					
No pain or discomfort	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Slight pain or discomfort	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Moderate pain or discomfort	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Severe pain or discomfort	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Extreme pain or discomfort	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Anxiety and depression																					
Not anxious or depressed	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Slightly anxious or depressed	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Moderately anxious or depressed	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Severely anxious or depressed	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	
Extremely anxious or depressed	[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]		[illegible]	[illegible]	

*UK Control group - from Health survey of England 2017

O10

Effect of COVID-19 infection on renal allograft sensitization and overall outcomes in kidney transplant recipients

Dr Azm Hussain, Dr Kashif Eqbal, Dr Rafeea Shah, Ms Mary Dutton, Dr Miriam Berry

Univeristy Hospitals Birmingham NHS FT, Birmingham, United Kingdom

Introduction: This study aims to look at the overall outcomes and effects of reducing immunosuppression on sensitization of Kidney transplant recipients with COVID-19 infection.

Methods: All the renal transplant patients with confirmed COVID-19 were followed up initially during their symptomatic period and subsequently were assessed for Donor specific antibodies/New HLA sensitization at three months. Data was collected for demographics and clinical parameters including acute kidney injury and need for renal replacement therapy.

Results: 48 patients (approximately 3.2% of our total transplant population) had confirmed COVID-19. 18 (38%) were females and 30 (62%) males. The median age was 55 years (range 27 – 84 years). 19 (40%) were White - British, 24 (50%) Asian and 5 (10%) Afro-Caribbean. Median time post-transplant was 84 months (range 6 – 360), and more recently transplanted patients were not at increased risk. AKI occurred in 15 (31%) of patients and 9 (60%) required renal replacement therapy. 6 (40%) patients with AKI recovered renal function. 10 patients underwent testing for HLA antibodies at 3 months post-infection. Although 2 patients had new anti-HLA antibodies, none of them had Donor specific antibodies. Similarly, no episode of transplant rejection has so far been identified. 19 (40%) patients died (one death was not attributed to COVID-19) with ethnicity proportionate to the study population.

Discussion: COVID-19 infection per se, and the transient reduction in immunosuppression during an active infection, does not appear to have had a major impact on the level of sensitization or acute rejection of renal transplant in short-term, however, more long term follow up will be required to ascertain the significance of new HLA antibodies and their effect on graft rejection and subsequent transplants. There is also significant mortality in patients who are admitted in the hospital despite the timely reduction in immunosuppression.

O12

Deceased organ donation programme - impact of trained transplant coordinators' services in a public hospital in India

Ms Sujatha Suriyamoorthi, Dr Sumana Navin, Dr Sunil Shroff

MOHAN Foundation, Chennai, India

Introduction: Trained transplant coordinators are a legal requirement in India as per the Transplantation of Human Organs (Amendment) Act passed in 2011. These transplant coordinators working in collaboration with the intensive care staff are the key to a successful organ donation and transplantation programme. A non-governmental organisation (NGO) started a structured Transplant Coordinators' Training Programme in 2009 tailored to India's needs. In 2015, the apex national level organisation used the same framework and created a national curriculum for transplant coordinators' training.

Methods: Trained transplant coordinators were placed in the largest public hospital in one of the states in India through a Memorandum of Understanding (MoU) between the hospital and the NGO. The impact of trained transplant coordinators on the deceased organ donation programme placed at the hospital was evaluated. The role and effectiveness of the trained transplant coordinators deputed was retrospectively studied in terms of two outcome measures – number of multi-organ donors, and number of organs and tissues retrieved.

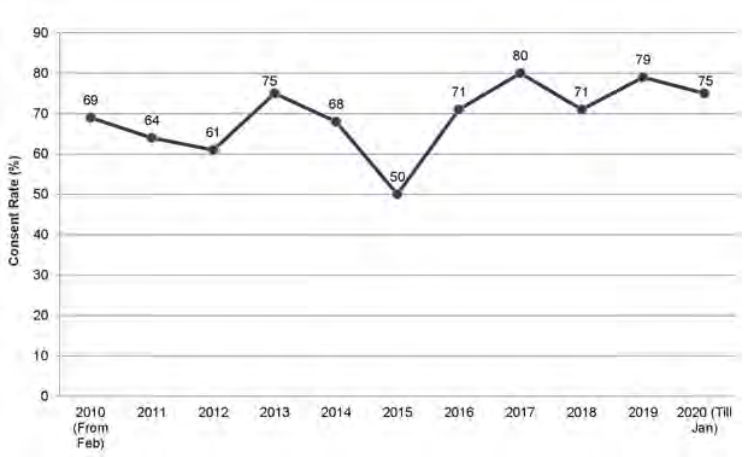
Results: The trained transplant coordinators working in collaboration with the intensive care personnel were instrumental in facilitating 136 deceased donations from February 2010 to January 2020 as compared to eight donations from 2000 to 2008. The study showed that the work of the trained coordinators in the public hospital resulted in a consent rate of 68% and contributed to 11% of all multi-organ donors (136 out of 1290 multi-organ donors) and 12% of the total organs and tissues (854 out of 7306 organs and tissues) retrieved in the state.

Conclusion: The successful deceased organ donation programme in the public hospital has led the way for similar MoUs with seven more public hospitals in the state. The transplant coordinators who underwent the structured training programme were able to effectively contribute to the deceased donation programme.

Image 1 - Multi-organ donations and organs and tissues retrieved in the state vs the public hospital

Year	Total no. of multi-organ donors in the state	Total No. of multi-organ donors in the public hospital	Total no. of organs and tissues retrieved from multi-organ donors in the state	Total no. of organs and tissues retrieved from multi-organ donors in the public hospital
2010 (from Feb)	87	24	524	151
2011	70	16	396	95
2012	83	18	465	117
2013	130	9	669	47
2014	135	12	726	74
2015	155	4	858	15
2016	185	13	1031	71
2017	160	12	939	84
2018	140	17	815	109
2019	127	10	758	82
2020 (till Jan)	18	1	125	9
Total	**1290**	**136**	**7306**	**854**

Image 2 - Consent rate for deceased organ donation at the public hospital (February 2010 to January 2020)



O13

NHS Blood and Transplant Clinical Leads for Utilisation – a new scheme to identify and tackle barriers to improved organ utilisation

Mr Tom Nicholson[1], Mrs Claire Williment[1], Mr Chris Callaghan[2,1], Mrs Diana Garcia Saez[3,1], Mr John Forsythe[1]

[1]NHSBT, Bristol, United Kingdom. [2]Department of Nephrology and Transplantation, Guy's Hospital, London, United Kingdom. [3]Royal Brompton and Harefield NHS Foundation Trust, London, United Kingdom

Introduction: Max and Keira's Law, which introduced an 'opt out' basis for consent for organ donation in England in May 2020, is anticipated to deliver 700 additional organ transplants across the UK within the next three years. Meanwhile the COVID-19 pandemic has added to existing challenges faced by transplant units. This scheme establishes a network of senior transplant clinicians across the UK, empowered to report and address barriers to organ utilisation.

Methods: NHS Blood and Transplant supported the appointment of 46 Clinical Leads for Utilisation (CLUs) for a total period of 4 months. Units performing kidney, pancreas, liver, heart or lung transplants, in both paediatric and adult patients, were included. CLUs will collaborate, with the support of NHSBT, via monthly engagement calls. CLUs will produce two key surveys: in the first an assessment of local barriers, the local impact of COVID-19, and evaluation of existing national NHSBT projects and data; in the second CLUs will supply an evaluation of actions taken to address them and consider plans for future national utilisation projects.

Results: In only 5 weeks UK transplant units and NHSBT have established a network of 46 funded CLUs. This suggests a need in the current structure for the CLU role and demonstrates the appetite at national and local levels for quickly driving forward improvements. By the end of February 2021 we will have obtained and analysed the results from the first CLU survey.

Discussion: Schemes to support transplant units in assessing the changes required at local and national levels are likely to have a key role in delivering improved organ utilisation.

O14

Increasing cardiothoracic organ retrieval opportunities through a Donor Care Physiologist led scouting programme

Miss Lorraine Fingleton, Mrs. Jennifer Baxter, Mr Marius Berman, Mr. Pradeep Kaul, Dr Antonio Rubino

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Acknowledging the population of people awaiting cardiothoracic transplantation across the country, it is imperative that every measure to increase the successful utilisation of viable organs is taken. To aid this, a Donor Care Physiologist (DCP) led scouting programme was introduced in 2013 to offer clinical support to local centres who are managing potential 'DBD' (donation after brainstem death) organ donors prior to cardiothoracic organ donation. The scouting service may be requested if the local centre or specialist nurse in organ donation feel that the potential organ donor is deteriorating or requires optimisation to increase the likelihood or quality of organs being offered for donation. This pilot study aimed to identify if the scouting programme demonstrates the ability to increase the successful retrieval of cardiothoracic organs from donors who may have a reduced likelihood of being accepted for organ donation due to instability or need for optimisation.

Methods: This retrospective, observational pilot study analysed data collected by a single- centre, DCP team to evaluate the process and outcomes of scouts undertaken within a 10 month period between December 2019 and September 2020. The primary objective was to identify if scouting successfully increased the number of cardiothoracic organs utilised within this time period. Data was collected from clinical charts and internal reporting systems to provide evidence for the study objectives.

Results: During the study time period the DCP team received eight scout requests. Whilst three of these requests required telephone provided guidance only, five requests required scout attendance which resulted in a range of invasive investigations such as Swan Ganz catheter insertion, transoesophageal echocardiography and bronchoscopy. The subsequent optimisation implemented resulted in the retrieval of five hearts and four double lungs which may have otherwise been declined for retrieval given the pre-scouting status of the organ donors.

Discussion: The evidence suggests that proactive scouting may increase the potential number of cardiothoracic organs utilised. Further study is required in this area to determine the full potential of this service.

O15

Re-evaluating transplant organs: organ preservation strategies in abdominal transplant surgery

Ms Reena Ravikumar[1], Ms Emily R Thompson[2], Mr Carlo DL Ceresa[3], Ms Gillian Hardman[2], Mr Marcus Taylor[4], Professor John H Dark[2], Professor Stephen J Wigmore[1]

[1]Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. [2]Newcastle Freeman Hospital, Newcastle, United Kingdom. [3]Oxford University Hospitals, Oxford, United Kingdom. [4]University Hospitals South Manchester, Manchester, United Kingdom

Introduction: To understand surgeon decision making in the need for and utilisation of modern organ preservation strategies in abdominal transplantation in an effort to optimise and improve organ utilisation.

Methods: An online anonymous survey was sent to all abdominal transplant surgeons in the UK to determine their current use of organ preservation strategies and their views on the potential benefit of machine preservation.

Results: The overall survey response rate was 62%: 31 liver, 74 kidney and 29 pancreas surgeons. All liver and pancreas transplant units, and 21 of 24 kidney transplant units were represented. Organ acceptance decision making is usually solely by the surgeon for all organs: 61% liver, 53% kidney, 80% pancreas. Hypothermic machine perfusion is reportedly available to 39% of liver surgeons and 43% of kidney surgeons. Ex vivo normothermic machine perfusion is reportedly available to 92% of liver surgeons and 31% kidney surgeons. Normothermic regional perfusion is reportedly available to 5 of the 7 organ retrieval units. 89% of liver transplant surgeons would use an organ preservation device for logistics and viability assessment. 26% of liver transplant surgeons would opt to use NRP in DCD followed by 25% who would not use any organ preservation strategy. The use of NRP would influence decision making in kidney utilisation for 42% of kidney transplant surgeons. For DCD livers, 36% of respondents would like the donor to undergo normothermic regional perfusion, 25% would prefer no donor intervention and 21% would like ex-vivo NMP. For DBD livers, 60% of respondents would like no organ intervention and 37% would choose ex-vivo NMP.

Discussion: There is significant heterogeneity in the availability and use of organ preservation technologies. However, the availability of organ preservation technologies to a unit does not appear to increase its utilisation. A review of the evidence and a uniform use of this technology would enable better understanding of its utility.

O16

Survival of renal allografts from deceased donors with albuminuria: a UK cohort study

Dr George Greenhall[1,2], Dr Maria Ibrahim[1,2], Dr Matthew Robb[1], Ms Elinor Curnow[1], Mrs Rachel Johnson[1], Dr Rachel Hilton[3], Dr Laurie Tomlinson[4], Mr Chris Callaghan[2,3], Mr Christopher Watson[5,6,7]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]King's College London, London, United Kingdom. [3]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [4]London School of Hygiene and Tropical Medicine, London, United Kingdom. [5]University of Cambridge, Cambridge, United Kingdom. [6]The Cambridge NIHR Biomedical Research Centre, Cambridge, United Kingdom. [7]NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation, Cambride, United Kingdom

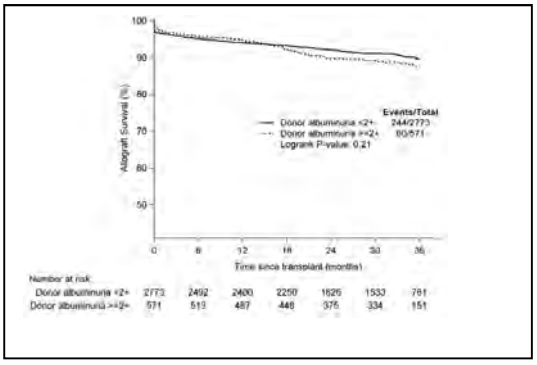
Background: Albuminuria measurement is part of the routine assessment of potential deceased kidney donors in the UK. However, its utility as a biomarker for organ quality is uncertain. We examined the relationship between donor albuminuria and renal allograft survival.

Methods: We performed a national cohort study using data from the UK Transplant Registry, including all adult primary single kidney transplants between 1st January 2016 and 31st December 2017. We defined donor albuminuria as ≥2+ on dipstick testing (≥100 mg/dL). We used Cox regression to estimate the hazard ratio (HR) of allograft failure up to three years, censored at death, comparing transplants from donors with and without albuminuria. We also compared three-year estimated glomerular filtration rate (eGFR) and examined the relationship between albuminuria and donor utilisation.

Results: Among 3,387 transplants, 16% (557) came from a donor with albuminuria. The incidence of allograft failure in transplants from donors with and without albuminuria was 10.5% and 8.8%, respectively. After adjusting for confounders, there was no evidence of an association between donor albuminuria and allograft failure (HR 1.19, 95% CI 0.89-1.59). We also found no evidence of a difference in eGFR at three years (52.2 vs 50.7 ml/min/1.73m^2, p=0.80). During our study period, consented donors with albuminuria were less likely to become kidney donors than those without albuminuria (56% vs 68%, OR 0.76, CI 0.62-0.92).

Conclusion: In the UK, donor albuminuria has little apparent value as a prognostic biomarker in deceased donor renal transplantation. There appears to be a reluctance to utilise kidneys from donors with albuminuria. It may be possible to expand organ utilisation without negatively impacting outcomes.

Figure: Death-censored allograft failure in renal allografts from donors with vs without albuminuria



O17

The psychological impact of deceased organ donation upon specialist healthcare practitioners

Mrs Rachel Stoddard-Murden

NHSBT, Plymouth, United Kingdom

Introduction: The continued achievements of organ donation and transplantation in the UK have saved and improved many lives, exceeding predictions of 2007 (NHSBT, 2018). This increased intensity of work is performed by the same number of colleagues, resulting in increased exposure to; acutely bereaved families, retrieval operations, death and dying. The human cost to caring can be evidenced in the anecdotal experiences of colleagues. The retention of skilled professionals is key to furthering these programmes success, ultimately leading to more families supporting donation. A review commissioned by the Prime Minister focused on employers better supporting the mental health of employees -Farmer and Stevenson (2017), revealing the size of the UK's mental health challenge.

Methods: A qualitative phenomenologist approach to 22 audio-recorded face-to-face interviews with UK NORS team Surgeons, Practitioners and Specialist Nurses. The data was thematically analysed using an inductive approach, making sense of phenomena from an individuals' perspective with a constructionist view supporting lived sociocultural experiences.

Results: The findings reveal that all the participants experiences impact psychologically, both in a beneficial and detrimental way. The findings also postulate that the greater the beneficial impact in six key areas, the greater the increase in personal performance and alignment with the values of a high-quality expert service through retainment, and individual's satisfaction in role.

- Control of change
- Boundary protection
- Cumulative effect
- Welfare
- Civility
- Support

Discussion: The findings raise awareness of the psychological impact on individuals working in deceased organ donation. Offering guidance and recommendations for NHSBT to develop strategies assisting colleagues to increase the beneficial impacts in the identified six key areas of their roles. The broad sample depth and size is reflective of the population chosen, there may be potential bias due to self-selection participation.

O18

Focused webinars have potential to increase BAME numbers on the ODR

Dr Sarah Rhammaz[1], Dr Sahira Dar[2], Dr Shahnaz Awad[3], Dr Saeed Ahmed[4], Mr Usman Khalid[5]

[1]Hereford County Hospital, Hereford, United Kingdom. [2]NHSGGC, Glasgow, United Kingdom. [3]NHS Central Manchester CCG, Manchester, United Kingdom. [4]South Tyneside and Sunderland NHS Foundation Trust, Sunderland, United Kingdom. [5]Cardiff Transplant Unit, University Hospital of Wales, Cardiff, United Kingdom

Introduction: Black, Asian and Minority Ethnic (BAME) groups (14% of the UK population) are over-represented (31.6%) in the UK transplant waiting list, yet under-represented (8%) in the deceased donor population. Potential reasons include cultural practice, system mistrust, and lack of religious guidelines awareness/understanding. As approximately one-third of the BAME population is Muslim, the British Islamic Medical Association (BIMA) has commenced an organ donation raising awareness campaign using webinars with specific emphasis on Islamic viewpoints. The aim of this study was to evaluate the efficacy of such webinars on improving participants' knowledge.

Methods: 341 participants attended 2 webinars and were invited to complete a short questionnaire pre and post-webinar to assess their opinion on Islamic permissibility of living and deceased organ donation and whether they would be willing to join the ODR.

Results: 50 completed the pre-webinar questionnaire. 37 (78%) were not on the ODR. 36 (72%) and 26 (52%) of participants felt that living organ donation and deceased organ donation was permissible in Islam respectively. 67 post-webinar questionnaires were completed. 58 (87%) and 47 (70%) felt that living donation and deceased donation was permissible in Islam respectively, and 42 (63%) were willing to join the ODR. Qualitative analysis of the feedback highlighted consistently that participants benefited greatly from the Islamic Scholar's talk highlighting the viewpoints on organ donation using the Qur'an and Prophetic teachings.

Conclusion: Our results showed that focused webinars highlighting the Islamic viewpoint of organ donation and transplantation using authentic sources markedly increased participants' knowledge and their receptibility to becoming an organ donor. Moreover, such programmes display a potential in increasing the much needed BAME representation amongst the organ donor population, and given the current limitations of traditional conferences, the successful use of online webinars as an alternative medium for health promotion, is encouraging.

O19

Exploring the potential for neonatal organ donation in Scotland: potential donor audit 2016-2020

Dr Louise Leven[1], Mr Neil Healy[2], Miss Susan Archibald[3]

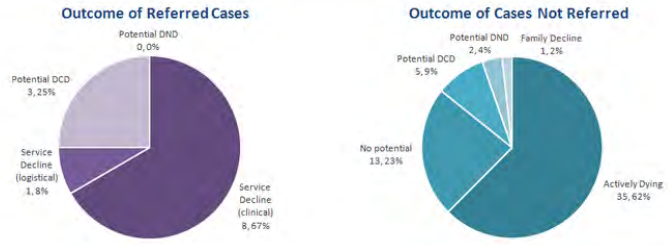
[1]Royal Hospital for Children, Glasgow, United Kingdom. [2]Scottish National Blood Transfusion Service, Edinburgh, United Kingdom. [3]NHS Blood and Transplant, Falkirk, United Kingdom

Introduction: The true potential for neonatal organ donation in the UK is not known. The National Paediatric and Neonatal Deceased Donation strategy recommends the need to fully understand the potential for neonatal donation. One retrospective study suggested 54% of neonates who die could potentially donate.[1] Our own retrospective audit suggested 6.8% of deaths in our neonatal unit could be potential donors. To allow more accurate estimation of the potential for neonatal organ donation, we completed a potential donor audit (PDA) in Scotland from March 2016 to March 2020.

Methods: All neonates ≥36 weeks gestation who died in a level 3 neonatal intensive care unit in Scotland were eligible for inclusion if they were ventilated at the point of decision to withdraw life sustaining treatment. Cases were reviewed by a Specialist Nurse in Organ Donation (SNOD), neonatologist or both. NHS BT Electronic offering system (EOS) PDA tool was used.

Results: 72 neonatal deaths were audited over the 4 year period. 4 cases were found to be out with audit criteria (2 not ventilated and 2 <36 weeks CGA) and were excluded. 12 cases were referred to the organ donation service. The outcome of referred and non referred cases is shown in Figure 1. There was one proceeding donor during the audit period. 11/68 (16%) of deaths were considered potential organ donors.

Figure 1: Outcome of referred and non referred cases



Discussion: We have established that there are a small number of neonates each year in Scotland who are potential organ donors. With the complexity of authorisation and donation, it is likely this number would reduce further. However, we believe every opportunity for donation should be explored. For the families of those who donate, donation can provide comfort after the death of a child and with many paediatric transplants requiring sized matched donors, the neonatal population could have a positive impact on the transplant waiting list.

1. Charles E, Scales A, Brierley J. The potential for neonatal organ donation in a children's hospital. *Archives of Disease in Childhood - Fetal and Neonatal Edition* 2014;99:F225-F229.
2. Leven L, Healy N, O'Reilly K. Neonatal Organ Donation in Scotland. *Journal of Paediatric and Neonatal Individualised Medicine* 2015; 4(2):e040209

O20

Development of a mobile application for comprehensive organ donation guidelines and educational resources

Miss Aisling Mc Intyre[1], Mrs Jane Harden[1], Doctor Nitin Shastri[2]

[1]London organ donation services team, NHS Blood and Transplant, London, United Kingdom. [2]Royal Brompton and Harefield NHS Foundation Trust, London, United Kingdom

Introduction: Mobile applications are becoming more popular within the healthcare setting as innovative use of technology is increasingly applied to improving healthcare practitioner education. Organ donation is a specialist area, which is often poorly understood. Following feedback from the local organ donation committee (ODC), shortcomings in critical care staff management of organ donation was identified. We aimed to develop a mobile application for organ donation to provide easy access to comprehensive guidelines.

Methods: The local ODC secured funding to approach an IT developer to create the desired application. Key stakeholders, including members of the critical care MDT, were invited to partake in the design of this application. The focus was on creating a versatile and effective application to optimise gold standard practice when caring for potential organ donors.

Outcome: This application has now been launched in our local trust. It was distributed to all nursing and medical staff in adult and paediatric intensive care units and theatre. We are planning to send feedback questionnaires to our users and will consider any suggestions to improve performance and usability of the application. We are in the process of sharing the application with our colleagues at other London Intensive care centres where they will have the option to alter the application to suit the needs of their specific unit.

Discussion: The mobile application was created to provide critical care staff with support tools to assist them with the organ donation process. The application provides an accessible platform offering organ donation guidelines, live access to neurological death testing forms and educational videos. The guidelines can be downloaded to any device. The advantages of a mobile application, include its accessibility, ability to be updated to the latest guidance and consolidating educational materials in a secure format.

O21

Interest in and exposure to transplant surgery among medical students and trainee doctors

Miss Diana Wu

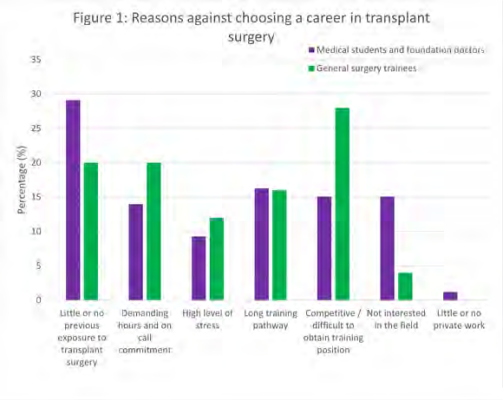
Ninewells Hospital, Dundee, United Kingdom

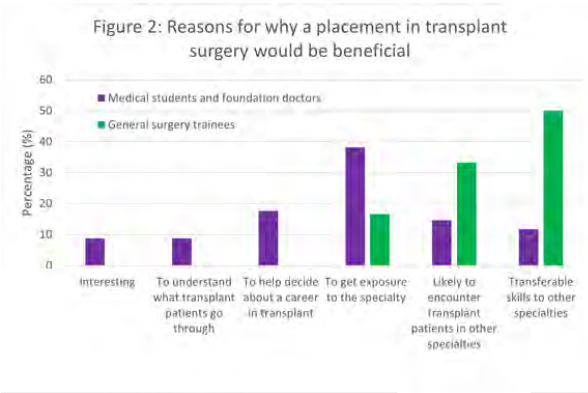
Introduction: There is an increasing need for more transplant surgeons as the number of patients requiring transplantation continues to rise and the specialty continues to expand. The aim of this survey was to determine the level of interest in and exposure to abdominal transplant surgery among medical students and trainee doctors.

Methods: A 10-question online survey was sent to all medical students, foundation doctors and general surgery trainees in one Scottish deanery. Responses were anonymised and analysed in two groups; group 1 included medical students and foundation doctors and group 2 included general surgery trainees.

Results: There were a total of 40 respondents (31 in group 1, 9 in group 2). Overall, 3 (7.7%) respondents were interested in a career in transplant surgery. The most common reason against choosing a transplant surgery career in group 1 was little or no previous exposure to the specialty, while in group 2 it was seen as too competitive (Figure 1). The most common reason for interest in the specialty in both groups was the life saving surgery. All of the respondents in group 1 and 44.4% in group 2 did not know about the UK training pathway for transplant surgery. The majority of respondents had never had a placement in transplant surgery (group 1 n=29, 93.6%; group 2 n=5, 55.6%), however most respondents believed that a placement would be beneficial (Figure 2).

Discussion: Exposure to transplant surgery at medical school and in the early years of medical training is poor and seen as the main reason for not considering it as a career. There is poor knowledge about the transplant training pathway. Most trainees believe they would benefit from a placement in transplant surgery regardless of their chosen career. Greater exposure at an early stage may lead to improved interest in the specialty.





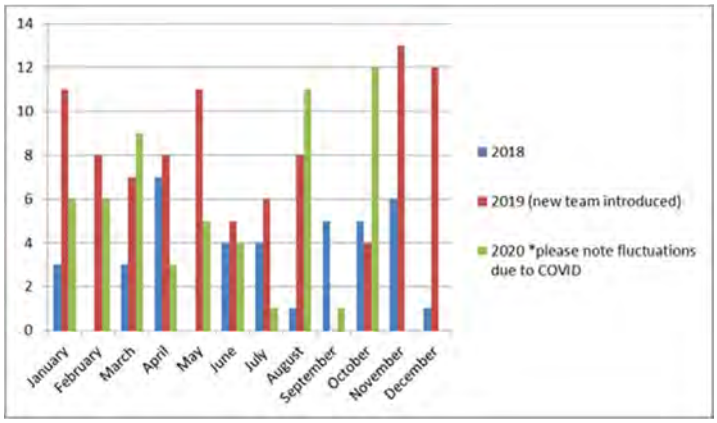
O22

Supporting and encouraging patients to write to their donor families; breaking down barriers with new techniques

Miss Sarah Claydon, Mrs Bianca Lord, Miss Katie Archer, Mrs Christine Lawson, Mr Richard Quigley

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Writing to donor families can be a highly emotive and difficult topic. We have spent the last year improving our service to ensure we have a robust method for sending and receiving letters. Following an internal review a team were recruited to ensure accountability for every letter that passed through the service. The average processing time was improved from 3-4 months in 2018 to less than 1 month in 2019. We saw an increase in patients accessing the service by more than 50% in 2019. From our records 119 recipients have corresponded with their donor family since 2015 and in 2019 alone 63 additional recipients corresponded with their donor families. The increase in letters exchanged since the introduction of the new team in 2019 is outlined below:



Link nurses were identified to help support staff and patients understand the process of letter writing however it was identified that despite this improvement the barriers to writing potentially remained. Our aim is to increase the amount of letters exchanged and the availability of the service.

Method: To help break down the barriers of communication and help people understand, we spoke to the transplant patient group for feedback and have enlisted their help in creating template cards through their own designs and ideas.

Results: After speaking to the patient group common themes that required additional explanation emerged, including; support in how to write to the donor family, the processes involved on how letters are exchanged and access to information.

Discussion: We have created a patient video to help answer their questions and encourage discussion between patients, their relatives and the wider transplant team. We have collaborated with our patient group to design template cards that can be used to facilitate donor family letter writing. These will be trialled with our patient group over the next year.

O23

Thinking creatively during covid-19: raising awareness about kidney disease, organ donation and "opt out" among south Asian communities

Mrs Neerja Jain[1], Mrs Bushra Riaz[1], Ms Samantha Baker[2]

[1]Kidney Research UK, Peterborough, United Kingdom. [2]Scottish Government, Edinburgh, United Kingdom

Introduction: Registration onto the NHS ODR from Asian communities was low in Scotland. It is known that these communities are more likely to need a transplant, less likely to donate and more likely to wait longer for a donation. One major barrier is education and engagement. We had been utilizing a well-established approach. This year, however, COVID-19 has made face-to-face engagement impossible; yet with the impending law change, we have developed innovative engagement methods.

Methods: Continuing to work in collaboration with faith and community organisations - key to our earlier success, we developed webinars to raise awareness of kidney disease, organ donation (OD), faith and "opt out". These are organised with each organisation at suitable times (often evenings) for their congregations. Speakers include experts on faith, doctors, patients, and policy staff. There is a Q & A session as well as a questionnaire to gauge interest and attitudes, pre and post-webinar. Conducted in South Asian languages too in order to reach even more "poorly reached" people, they are recorded for greater access.

Outcome: Despite some logistical challenges and a steep IT learning curve, we have received excellent feedback from grassroots organisations, as well as the speakers and public. We have had three Islam-based webinars, one Multi faith and three are being planned for the Sikh and Hindu communities, along with another multifaith webinar, co-hosted by the BMA. We estimate to have reached several hundreds of people, with feedback such as "*Really interesting talks – great speakers – thank you*"; "*Yes, I would consider [OD], currently my husband is but I haven't yet registered, this has inspired me to*"

Discussion: We have adapted during Covid-19 to continue to address barriers to OD in Asian communities. It bodes well to continue educating and empowering people to make a choice about whether to donate.

O24

Evaluation of legislative change training

Mrs Louise Hubner[1], Mrs Cathy Miller[1], Mrs Sonya Paterson[2]

[1]NHSBT, Birmingham, United Kingdom. [2]NHSBT, Newcastle, United Kingdom

Introduction: The Legislation Change Team (LCT) worked to provide a robust training programme for organ and tissue donation staff regarding the legislation changes which were planned and are now in place, to be able to apply Deemed Consent in practice as per the Organ Donation (Deemed Consent) Act 2019.

Methods: Training was planned face to face for the delivery of 4 modules to be delivered over the course of a year underpinned by Blooms Taxonomy. Fig 1. We were keen to deliver training that was fit for purpose and therefore assessed what had gone well in Wales when implementing deemed legislation and undertook a Training Needs Analysis to understand from the workforce what training would help them connect the theory and practical knowledge in the live environment.

Fig 1. Bloom's taxonomy

Source: Armstrong, 2020/Vanderbilt University Center for Teaching (Creative Commons)

Part-way through the training programme, there was the requirement to change to a digital platform and reduce the number of modules due to the Covid-19 pandemic. Following each of the 3 modules we have delivered, we have undertaken an evaluation and have submitted our findings to the British Journal of Nursing for successful publication and to evaluate effectiveness from a project perspective. We are now evaluating the whole of the training for further publication and analysis to ensure the workforce are confident and competent to work within the legislation.

Outcome: Despite the COVID-19 pandemic, the team successfully converted face to face training to an on-line digital platform and achieve the Department of Health targets of training 100% of all Specialist Nurses in Organ and Tissue Donation participating in the on-call rota. The training evaluated very well as shown in Fig 2.

Fig 2. Evaluation of 3 modules

Module	Mode of Delivery	Star Rating
1. Legislation	Face to Face	8.7/10
2. Conversation	Face to Face	9.1/10
	Virtual	8.3/10
3. Consolidation	Virtual	8.6/10

Discussion: Through evaluation of the training and debriefing we are able to understand where the training has worked well and where there are gaps to enable us to make recommendations.

O26

Interim analysis #options study - understanding the attitudes and opinions of NHS staff in England to the change in organ donation legislation

Professor Caroline Wroe[1], Dr Natasha Newell[2], Mr Mark Jones[3], Dr Matt Robb[4]

[1]Renal Unit, South Tees Hospitals NHS Foundation Trust, Middlesbrough, United Kingdom. [2]Research Design Service, North East and North Cumbria, Newcastle, United Kingdom. [3]Statistical and Clinical studies Department, NHS Blood and Transplant, Bristol, United Kingdom. [4]Statistical and Clinical studies Department, NHS Blood and Transplant, Bristol, United Kingdom

Introduction: This study was designed to understand the views of a representative sample of the NHS workforce on the change in organ donation legislation, to understand how demographic variables affected these views and to identify the need for educational tools to support staff with this change in legislation across different NHS staff groups.

Methods: A questionnaire was developed by the study group, peer reviewed by NHS Blood and transplant, then developed into an NIHR portfolio clinical trial (IRAS 275992). The study commenced in July 2020 and data was collected from NHS partner organisations within North Thames and the North East and North Cumbria.

Results: Data was collected from 2541 participants up to 18 October 2020. Participant's gender, age, ethnicity, religion, NHS place and type of work were collected. Participants were asked about their awareness of and support for the change in organ donation legislation. Participants were offered the option of free text answers to explore why some participants were against the change, what information they would you like to help them decide and what has stopped them discussing it with their friends/family.

Awareness- 7 out of 10 participants were aware of the change; this was consistent across age but varied with ethnicity, religion and acute vs mental health service employees. Participants who were aware of the change were more likely to be in favour compared with participants who were unaware or unsure of the change (88% and 76% respectively).

Support-8 out of 10 participants were supportive of the change; support was consistent across gender, primary and secondary care sites and face to face vs non-clinical staff, but varied with age, ethnicity, religion and acute vs mental health service staff.

Discussion: Awareness and support for the change in legislation was high amongst NHS staff participants, differences related to age, ethnicity, religion and type of NHS service. This interim analysis has identified the need to engage more participants from BAME backgrounds. This data offers opportunities to develop targeted educational interventions to support decision making amongst NHS staff.

O27

UK organ donation and transplantation (ODT) during the COVID-19 pandemic: equity, utility and resource allocation

Dr Shivani Sharma[1], Dr Francesco Giovinazzo[2], Dr Abigail Hucker[1], Dr Ken Farrington[3], Dr Chris Lawrence[4], Dr Giulio Valentino Dalla Riva5[5], Dr Antonia Cronin[6,7]

[1]University of Hertfordshire, Hertfordshire, United Kingdom. [2]Universitario Agostino Gemelli IRCCS, Rome, Italy. [3]Lister Hospital, Hertfordshire, United Kingdom. [4]Spire Healthcare, London, United Kingdom. [5]University of Canterbury, Canterbury, New Zealand. [6]King's College, London, United Kingdom. [7]Guy's and St. Thomas' NHS Trust, London, United Kingdom

Introduction: NHS reconfiguration to increase capacity for COVID-19 impacted hugely on ODT activity which was selectively paused or suspended. April 2020 saw a 72.8% reduction in transplant activity. Estimates suggest this could increase numbers waiting for transplant by 16% and has significant implications for Black and Minority Ethnic (BAME) patient's waiting-time. We investigated healthcare professional's views on access to transplantation during COVID.

Methods: We undertook an online 22 item cross-sectional study exploring five key areas: respondent demographics and employment; impact of COVID-19 on ODT programmes; equitable access to healthcare resources during the pandemic; absolute conditions under which transplant activity should resume; and the national transplant community response. The survey was disseminated electronically via NHSBT bulletin and to membership of the British Transplantation Society, Renal Association and British Renal Society. Statistical analyses were performed in SPSS (version 26).

Results: N=266 completed all survey items and collectively covered all regions across the UK. Majority of respondents were nurses (30%), transplant physicians (24.2%) and referring doctors (22.3%). All respondents reported a considerable degree of 'lockdown'. Least impact was reported in Northern Ireland. Absolute criteria for ODT resuming during COVID-19 included: the donor (77.7%) and recipient (74.8%) screening negative for COVID; transplanting hospital having a COVID-19 free pathway (67.8%); and post-operative critical care capacity (71.3%). The majority believed the transplant community acted responsibly and proportionately (51.6%). There was a lack of consensus regarding resource allocation to ODT during the pandemic. 32% stated resource allocation had been inequitable. 28% stated allocation had been equitable. There was a cluster of respondents who asserted issues related to equity are not relevant in a pandemic situation, others were undecided. Distinct priorities related to maximizing the number of quality adjusted life years (QALYs) (37.9%); saving the greatest number of lives (37.6%); proportionate rationing for life saving intervention regardless of COVID status (24.8%); and saving the greatest number of life years (21.7%).

Discussion: Our survey captured a representative sample of ODT professionals impacted by the pandemic across the UK. Sharing knowledge was identified as a significant strength during COVID. The lack of consensus on resource allocation to ODT during the pandemic requires further interrogation especially given the inevitable disparity in access to transplantation that will affect BAME patients.

O28

Medication adherence in kidney transplant patients: a single centre comparison between patients 12-18 months post-transplant and long-term kidney transplant patients at least 7 years post-transplant

Miss Rosie Heape[1], Mr Arcan Altinar[1], Miss Sharon Frame[2], Ms Linda Ross[2], Ms Hayley Wells[2], Ms Eilish Nugent[2], Dr Rohan Sundramoorthi[2], Prof John Weinman[1], Dr Joseph Chilcot[1], Dr Antonia Cronin[1,2]

[1]King's College, London, United Kingdom. [2]Guy's and St. Thomas NHS Trust, London, United Kingdom

Introduction: Adherence to immunosuppressive medication plays an important role in kidney transplant outcome and graft survival. Published research suggests a high prevalence of nonadherence among transplant patients. The purpose of this study was to investigate whether, and if so to what extent, immunosuppression adherence varies between two discrete renal transplant patient cohorts under regular follow-up: individuals 12-18 months post-transplant and long-term kidney recipients at least 7 years post-transplant.

Methods: Between 01/01/2019 and 01/02/2020 kidney transplant recipients between 12-18 months post-transplant attending transplant clinic and all long-term transplant recipients (LTR) attending our Annual Review Clinic completed screening questionnaires. These included adapted versions of (i) Medicines Adherence Report Scale (MARS) and (ii) Beliefs about Medicines Questionnaire (BMQ). Results were uploaded to the electronic patient record.

Results: N=52 transplant recipients between 12-18 months post-transplant completed the questionnaires. Of these 29 (53.7%) were male and 23 (42.6%) were female with mean age 48.4 years (range 21-72 years, *SD*=14.21). N=231 LTR completed the questionnaires. Of these 148 (64.1%) were males and 83 (35.9%) females with mean age 53.15 years (range 20-79 years, *SD*=12.71). A Mann-Whitney U test revealed statistically significant differences in adherence between groups. Patients 12-18 months post-transplant reporting significantly better adherence compared with patients >7 years post-transplant (p = .040). A *t*-test revealed patients 12-18 months post-transplant reported significantly greater concerns surrounding medication than LTR (p = .014). Results are presented in Table 1.

Discussion: Our comparative analysis identified statistically significant differences in medication adherence between transplant patients between 12-18 months post-transplant and LTR > 7 years post-transplant. These findings highlight the need for continued improved adherence support for all transplant patients regardless of time since transplant in order to optimise graft survival. Further interrogation of adherence models is necessary to identify potential factors contributing to nonadherence.

Table 1. *Comparison of characteristics and MARS scores between groups*

	12-18 months post-transplant (*n* = 52)	Over 18 months post-transplant (*n* = 231)
Gender, n (%) Male Female	29 (53.7) 23 (42.6)	148 (64.1) 83 (35.9)
Age in years, M (*SD*); range	48.4 (14.21); 21-72	53.15 (12.71); 20-79
Mean MARS score (range)	29.50 (28-30)*	29.10 (17-30)*
Mean rank	157.19	134.16
BMQ Dimension, M (*SD*)[RH5] Necessity Scale Concerns Scale	22.40 (3.21) 12.88 (4.80)*	22.29 (3.42) 11.39 (5.52)*

* $p < .05$

O29

Deceased organ donation rates among racial and ethnic minorities is increasing: not exactly. A UNOS and NHSBT donor data analysis over the last five years

Mr Hemant Sharma[1,2], Mrs Agimol Pradeep[3], Mrs Angela Ditchfield[4], Dr Bhavesh Devkaran[1], Dr Mauro Tun Abraham[5], Dr Pablo Lozano Lominchar[6], Dr Anton Skaro[5], Mr Sanjay Mehra[1]

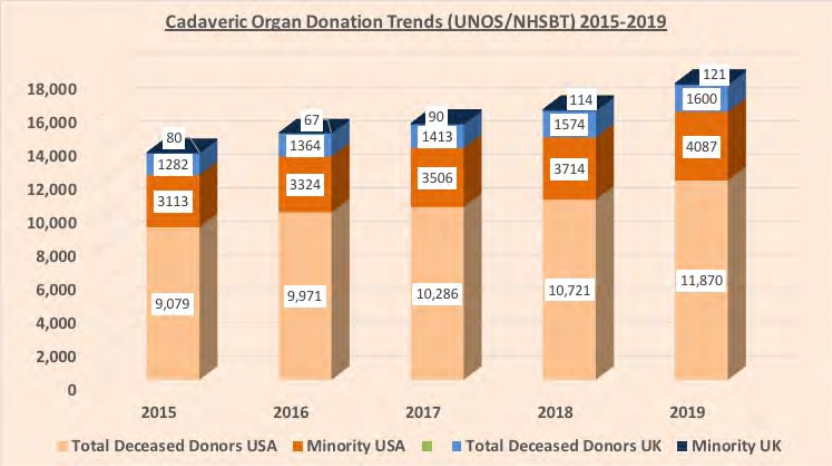
[1]Royal Liverpool University Hospital, Liverpool, United Kingdom. [2]Oschner Clinic, New Orleans, USA. [3]King's College, London, United Kingdom. [4]Manchester Royal Infirmary, Manchester, United Kingdom. [5]University of Western Ontario, London, Canada. [6]Hospital General Universitario Gregorio Marañón, Madrid, Spain

Background: Numerous initiatives were instituted to augment donor yield from the minority-population over the last decade. The recent reports suggest that organ donation rates from minority-population have been increasing. The comparative organ-donation-data from the minority-population reported to UNOS/NHSBT over the last five-years was data-mined.

Methods: Deceased-Organ-donation figures from UNOS/NHSBT-reports from 2014/15-2019/20 were analysed. The percentage-trends and organ-donation probabilities of all donor-groups were calculated.

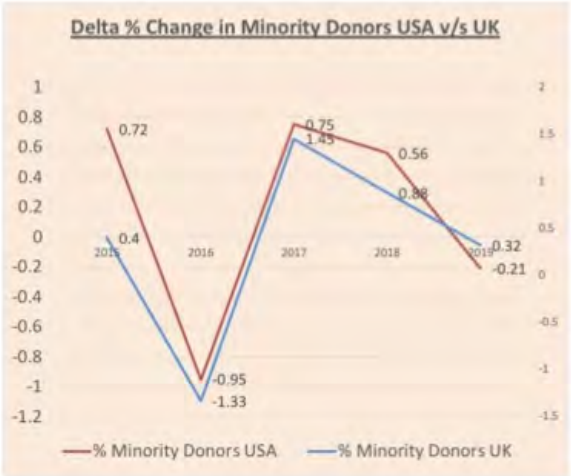
Results: There has been an increase in absolute numbers of total deceased organ-donations in both the USA (N=9079 in 2015, N=11870 in 2019) and the UK (N=1298 in 2015, N=1454 in 2019). Also, there has been an increase in donations from minorities (USA N=3113 in 2015, N=4087 in 2019; UK N=80 in 2015; N=121 in 2019). In the USA, the % share of organ-donation from minorities has been nearly constant at approx. 33-34% since 2015, while in the UK the % share of organ-donation from minorities has marginally improved from 6.2 % in 2015 to 7.3% in 2019. Despite the increase in total-numbers, the Delta-Δ change in organ-donation from minorities compared to total organ-donation volume has shown a negative trend compared to the previous years (USA 0.72% in 2015, --0.21%in 2019; UK 0.40% in 2015; 0.32% in 2019). Of the US-minorities; Black and Hispanic-donors account for >80% of deceased organ-donation, while in UK, Asian, Blacks and Multiracial donors account for >90% donations. Population and viewpoints of minority-populations are different in both countries, yet religious/cultural beliefs are the commonest reasons for a family declining donation. Little access to information about donation has been reported in some regions of the USA.

Conclusion: Despite a marginal increase in donation numbers, the overall organ-donation from the minority-population is still low and has not kept in pace with total-donation volumes. The UK minority-population needs more administration initiatives and education to improve organ-donation.



	Minority USA Donors	Total Deceased Donors USA	Minority UK Donors	Total Deceased Donors UK
Year 2015	3113	9,079	80	1282
Year 2016	3324	9,971	67	1364
Year 2017	3506	10,286	90	1413
Year 2018	3714	10,721	114	1574

Table 1: Summary Sheet Donors UNOS/NHSBT – 2015-2019



O30

'If you want to help people go volunteer at a soup kitchen': exploring staff attitudes towards unspecified kidney donors in the UK

Miss Mira Zuchowski[1], Professor Nizam Mamode[2], Professor Heather Draper[3], Dr Peter Gogalniceanu[2], Dr Sam Norton[1], Dr Joseph Chilcot[1], Dr Alexis Clarke[4], Dr Lynsey Williams[4], Dr Timothy Auburn[4], Dr Hannah Maple[2]

[1]Department of Psychology, Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, United Kingdom. [2]Department of Transplantation, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [3]Health Sciences, Warwick Medical School, University of Warwick, Coventry, United Kingdom. [4]School of Psychology, University of Plymouth, Plymouth, United Kingdom

Introduction: Unspecified kidney donation (UKD) has made significant contributions to the UK living donor programme, both directly and as part of the UK Living Kidney Sharing Scheme (UKLKSS). Nevertheless, some transplant professionals still view these donors with a degree of suspicion regarding their motivations. The aim of this study was to investigate whether negative staff attitudes were present within the UK transplant community and if these had an impact on clinical practice.

Methods: We conducted a qualitative interview study of UK transplant professionals as part of the Barriers and Outcomes in Unspecified Donation (BOUnD) study, covering 3 high-volume and 3 low-volume UKD centres. Semi-structured interviews were subjected to inductive thematic analysis. This involved multiple consecutive readings of 500 pages of transcripts in order to identify meaningful themes.

Results: Sixty transplant professionals were interviewed, and 5 major themes emerged: ethics of UKD; donor-recipient relationships; need to manage patient expectations; managing staff stereotypes; and complex attitudes. The results highlighted that staff communicated reservations about permitting UKD amongst young donors. Whilst staff viewed UKDs more favourably than in the past, they were still regarded by some as mentally unstable and scepticism about pure altruism as a motivation for UKD persisted. Staff raised complex family dynamics associated with specified donation. Surgeons and anaesthetists were the predominant groups raising ethical concerns around inflicting injury on healthy individuals.

Discussion: This is the first in-depth study of attitudes of UK transplant professionals towards UKD. It provides valuable insight into the practice of UKD and has identified key areas which need addressing. A uniform approach to younger candidates is required, along with evidence in support of honourable motivations within both UKD and specified donors in order to manage stereotypes. The need to extend psychological assessment to specified donors is also worthy of consideration.

O31

The development of a patient reported experience measure for liver transplant care in the UK

Ms Harriet Hay[1], Ms Megan Bilas[1], Dr Steve Sizmur[1], Dr Amy Tallett[1], Dr Douglas Thorburn[2], Professor Derek Manas[3], Professor Darius Mirza[4]

[1]Picker Institute Europe, Oxford, United Kingdom. [2]Royal Free London NHS Foundation Trust, London, United Kingdom. [3]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle, United Kingdom. [4]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom

Introduction: Although various UK national patient surveys gather data about healthcare experiences, many do not address the needs of those with specific health conditions. This project aimed to develop and assess the validity of a Patient Reported Experience Measure (PREM) to understand care experiences in adult liver transplantees, allowing for the comparison, planning and improvement of services.

Methods: Depth interviews were conducted with 20 liver transplant patients to explore care pathways, experiences, and priorities, to inform the development of a set of PREM questions. A stakeholder advisory group, including clinicians and patients, was consulted during development. The PREM was cognitively tested with 23 liver transplant patients and underwent revisions to ensure that questions were fit for purpose before being piloted with seven transplant centres. Each centre sampled eligible patients who had received a liver transplant between three months and three years ago. A postal methodology was used to invite 2006 patients to complete the PREM, with up to two reminders to non-responders. Survey validity was explored using response frequencies, provider-level reliability and comparability, and structural analysis.

Results: A response rate of 60% (N=1198) across seven Liver transplant centres was achieved. Exploration of item non-response, drop-out, differentiation and structural analysis did not identify a need for removing any survey items. The majority of questions had under 5% missing or uninformative responses, with most respondents answering up to the final question, some amendments were made to improve the functioning of the PREM.

Discussion: Our new liver transplant PREM yielded a successful response rate using a postal methodology with two reminders, and functioned well in measuring liver transplant care experiences. The PREM is available to liver transplant centres to understand care experiences and identify areas for improving care locally and nationally.

O32

Maximising safety and minimising attendance; drive through bloods, one centres experience

Ms Sadie Von Joel, Mr Daniel White, Miss Sarah Claydon, Mrs Adi Robb, Mrs Amanda Miles, Mrs Chrissie Lawson, Mr Richard Quigley

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: To minimise episodes of rejection and infection regular blood tests are required for recipients on immunosuppression. During the peak of the first surge of COVID 19 Transplant recipients were classed as highly vulnerable and were asked by the Government to shield. Restrictions on clinic attendances within the Hospital and difficulties in accessing GP surgeries for blood tests meant that a solution had to be sought to ensure this patient group's safety.

Case presentation: The Transplant Nursing team at Royal Papworth Hospital proposed a drive through blood taking service that would mean that recipients would be able to have their blood tests done without unnecessarily exposing themselves to the virus. A paper outlining the initiative was drafted, submitted and then approved by the command and control centre. The paper outlined the details of who/when/where and how the service would be delivered.

Outcome: Recipients who required blood tests were contacted by phone and offered a time slot to attend the drive though bloods service. Recipients drove directly up to the Hospital main entrance where staff wearing appropriate PPE took bloods through the car window. These were then processed in the usual way with any medication changes called through to the recipients on the same day.

Discussion: This service proved very popular with the 1000-post transplant population at RPH with recipients often driving many miles to attend confident that it provided a safe alternative to their local Hospital/GP. The service was so efficient that the concept was rolled out to other specialities with Transplant staff taking pre-op bloods and COVID screens for surgical patients. The transplant Staff assisted the organisation by supporting the introduction of a similar service within general surgery.

O33

Outcomes after heart re-transplantation at a single UK centre

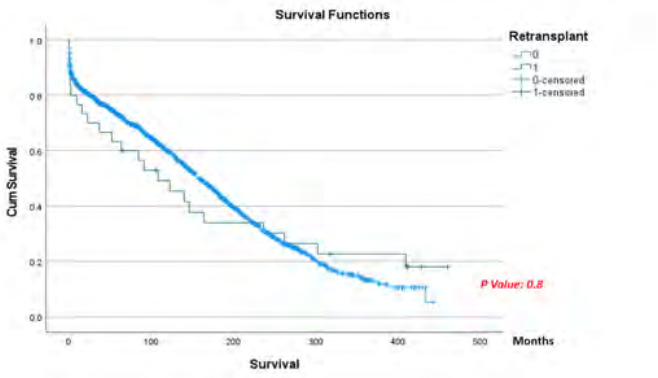
Mr Mohamed Osman, Mr John Hogan, Dr Eyal Nachum, Dr Ryan Andal, Mr Simon Messer, Dr Clive Lewis, Dr Anna Kydd, Dr Sai Bhagra, Mr Richard Quigley, Miss Jen Baxter, Mr Pedro Catarino, Mr David Jenkins, Mr Steven Tsui, Mr Pradeep Kaul, Mr Steve Large, Mr Marius Berman, Dr Stephen Pettit

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Heart re-transplantation is the only long-term treatment option for end-stage allograft failure after heart transplant. Only 100 to 120 heart re-transplants occur per year worldwide and they represent a very small proportion of all heart transplants (2.2% in 2016) [2]. As a result, many institutions are unfamiliar with the risks and benefits for heart re-transplantation. We have reviewed the short and long-term outcomes after heart re-transplantation at Royal Papworth Hospital.

Methods: This observational single-centre study included consecutive patients who underwent heart transplantation from January 1979 to September 2020. Patients were categorised according to their status (first heart transplant or re-transplant). Baseline characteristics were obtained from the unit database. Vital status was ascertained at 30 days and long-term survival was estimated using Kaplan-Meier analysis.

Results: 1574 patients underwent heart transplantation during the study period, of whom 1543 (98%) patients underwent their first heart transplant and 31 (2%) patients underwent re-transplantation. Twelve (38.7%) patients underwent acute re-transplantation, during the same hospital admission as their first heart transplant. Time to re-transplantation ranged from 1 to 8299 days (median 961.5 days). Age and survival are presented in the table. There was no difference in post-transplant survival at 30 days and 10 years . Kaplan-Meier estimate of survival is presented in the figure.



	Single transplant group	Re-transplant group
Age at transplant (mean +/- SD)	48 +/- 11.7 years	41.5 +/- 11.5 years
30 day mortality	128/1543 (8.3 %)	3/31 (9.8%)
10 year mortality	888 patients (57.6 %)	17 patients (54.8 %)

Conclusion: Carefully selected patients may have reasonable short-term and long-term survival after heart re-transplantation. Future work should examine the risk factors for early mortality after heart re-transplantation, so that centres can refine their selection of individuals who represent acceptable candidates for re-transplantation

References: 1. Rizvi, S.-S. A. *et al.* Outcomes and survival following heart retransplantation for cardiac allograft failure: a systematic review and meta-analysis. *Ann. Cardiothorac. Surg.* **7**, 12–18 (2018).

2. Chambers, D. C. *et al.* The International Thoracic Organ Transplant Registry of the International Society for Heart and Lung Transplantation: Thirty-fifth adult lung and heart-lung transplant report—2018; Focus theme: Multiorgan Transplantation. *The Journal of Heart and Lung Transplantation* **37**, 1169–1183 (2018).

O34

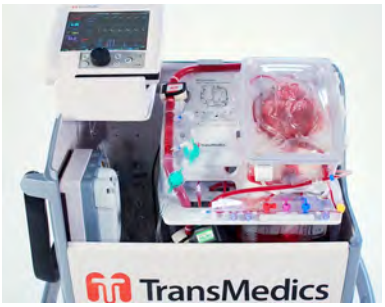
Extending the transplant practitioner role within the national organ retrieval team to include organ care practitioner

Mr Kiko Olano, Mr Richard Quigley, Mr Pradeep Kaul, Mr Marius Berman, Dr Stephen Pettit, Mrs Jennifer Baxter

Royal Papworth, Cambridge, United Kingdom

Objectives: The Transplant Practitioner (TP) has been an established member of the National Organ Retrieval Service (NORS) at one of the UK's cardiothoracic transplant centres. The TP is a registered nurse who is competent in perfusion and preservation of retrieved cardiothoracic organs. With the introduction of novel technology such as the Organ Care System (OCS) following Donation after Circulatory Death (DCD), the need to expand the role of a senior TP to include Organ Care Practitioner (OCP) has emerged and offered solution to the skills shortfall.

Methods: OCS is a portable ex-vivo organ perfusion system which can preserve donor hearts in a near-normothermic beating state from retrieval until it is disconnected for transplant. Various methods of training were launched to extend TP's role of practice. External training to OCS headquarters in Boston, Massachusetts was undertaken in order to develop skills and expertise on how to operate this innovative technology effectively and safely. In-house teaching sessions were also initiated by other competent members of the NORS team. Moreover, further peri-operative exposure was provided to trainees during retrievals to develop confidence and competence with the specialist equipment as well as maintain skills. The TP is deemed competent upon successful completion of a DCD heart competency pack.



Results: This advanced competency to the role of the TP has allowed role progression and increased expert responsibilities for non-medical nursing staff. Having this additional skill has allowed our centre to be fit for purpose prior to introduction of the National DCD Retrieval Service in September 2020. Four machine perfused hearts out of six organ retrievals that were operated by a TP were successfully transplanted.

Discussion: The expanded role of the TP as both organ preservation and Organ Care Practitioner continues to be successfully expanded upon within our NORS team ensuring that resilience and professional development is maintained.

O35

Deceased donor decision making practice in UK heart and lung transplantation: a questionnaire study

Miss Gillian Hardman[1,2], Mr Marcus Taylor[3], Miss Reena Ravikumar[4], Miss Emily R Thompson[1], Mr Carlo Ceresa[5], Prof Stephen J Wigmore[6], Prof Andrew J Fisher[2,1], Miss Karen Booth[2], Prof John H Dark[1]

[1]Newcastle University Translational and Clinical Research Institute, Newcastle upon Tyne, United Kingdom. [2]Institute of Transplantation, Freeman Hospital, Newcastle upon Tyne, United Kingdom. [3]Wythenshawe Hospital, Manchester, United Kingdom. [4]Royal Infirmary of Edinburgh, Edinburgh, United Kingdom. [5]Nuffield department of surgical sciences, university of oxford, Oxford, United Kingdom. [6]University of Edinburgh, Edinburgh, United Kingdom

Introduction: Current UK donor utilisation rate for heart and lung transplantation is 17% and 15%, respectively**.** We aim to analyse decision-making behaviour and practice in UK heart and lung donor utilisation.

Methods: Three heart and lung donor vignettes, initially declined but later accepted, were identified from the UK Transplant Registry (UKTR), and sent as a self-completion questionnaire to adult heart and/or lung transplant consultant surgeons. Donor age ranged from 48 to 69 years. Participants were asked if they would accept, decline or request further information for each offer, with free text responses describing clinical reasoning. Descriptive statistics were used for quantitative evaluation of results, with a thematic analysis of data generated from free text responses.

Results: Questionnaire response rate was 63% (n=22), with all 6 UK adult heart & lung transplant centres represented. Centres reported routine decision making as being performed by either a single surgeon (n=4) or by two or more surgeons (n=2). 55% (n=12) of respondents stated that all donor offers were discussed with them, with 45% (n=10) stating that not all donor offers are discussed with them. Heart donor offer acceptance was 70%, 25% requested 'further information' and 5% declined the offer. Lung donor offer acceptance was 68%, 10% requested further information and 20% declined. 4% of respondents cited the use of ex-vivo Lung perfusion (EVLP). The most frequently cited clinical concern, in both heart and lung cases, was 'donor age'. Themes identified were concerns regarding accuracy of information provided, need for decision maker to review images and need for full assessment & information from the retrieval team.

Discussion: With representation of all UK units, and 66% of surgeons, this study highlights the variation in decision making practice. Themes identified which contribute to clinical concerns for decision makers should be the focus of quality improvement strategies aimed at addressing organ utilisation.

O36

Impact of VAD implantation and transplantation on survival from listing for heart transplant

Miss Rachel Hogg[1], Miss Gillian Hardman[1,2], Dr Jayan Parameshwar[3], Dr Sern Lim[4], Dr Miguel Juarez[5]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]The Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, United Kingdom. [3]Royal Papworth Hospital NHS Foundation Trust, Cambridge, United Kingdom. [4]University Hospitals Birmingham NHS Foundation Trust, Birmingham, United Kingdom. [5]University of Sheffield, Sheffield, United Kingdom

Introduction: Candidates on the heart transplant waiting list may clinically deteriorate, requiring LVAD as a bridge to transplantation. There is a limited evidence base assessing the impact of LVADs on patient survival following heart transplant listing. Different characteristics may inform which patients receive LVADs or transplants, and so understanding these can re-assure patients of their care and guide future clinical practice.

Methods: Data were obtained from the UK Transplant Registry for all adult heart only registrations between 1 April 2010 and 31 March 2016 who did not have an LVAD at registration. Cox regression models were developed for 1-year and 5-year (conditional on 1-year) survival from listing, with time dependent variables utilised to consider LVAD implantation and transplantation within the times considered. Event history analysis was used to explore patient transition rates from registration to death.

Results: A complete dataset was available for 906 patients. The pathway for these patients is shown in Figure 1. The unadjusted five-year patient survival from listing (regardless of other events) rate was 63.6%. Several variables proved significant in predicting the patient pathway from registration (Table 1). After adjusting for other risk factors, at both 1- and 5-years, receiving an LVAD was associated with a significant increase in risk of mortality (1-year hazard ratio (HR): 4.26 p-value:<0.0001; 5-year HR: 4.32 p-value:<0.0001). Transplant within 1 year of listing was associated with significantly higher risk of mortality (HR: 3.07, p-value: <0.0001), which was no longer present at 5-years (p-value=0.44).

Discussion: After adjusting for other factors, LVAD implantation is associated with a higher risk of mortality following listing for transplantation. Despite this higher risk, LVAD provides a potentially life-saving management option. There was an increased risk of mortality associated with transplantation at 1-year, but this did not translate into long-term risk, supporting it as the gold standard treatment for these patients.

Figure 1: Transitions through the patient pathway within 5 years for cohort

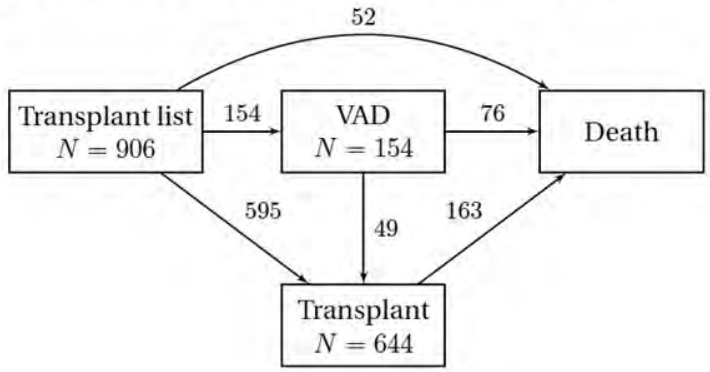


Table 1: variables found to be significant in analysis of patient transition rates from registration to death	
Variable	**p-value**
Urgency at registration	<0.0001
In hospital at registration	<0.0001
History of hypertension	<0.0001
Primary cardiac disease	<0.0001
Sex	<0.0001
Serum bilirubin at registration	0.0015
NYHA Class at registration	0.0015
Serum creatinine at registration	0.0220
Age at registration	0.0428

O37

Associations between human leukocyte antigens and renal function

Mr Marcus Lowe[1,2], Dr Antony Payton[2], Prof Arpana Verma[2], Dr Judith Worthington[1], Dr Isla Gemmell[2], Dr Patrick Hamilton[1], Prof William Ollier[2], Prof Titus Augustine[1], Prof Kay Poulton[1]

[1]Manchester University NHS Foundation Trust, Manchester, United Kingdom. [2]University of Manchester, Manchester, United Kingdom

Background: Human leukocyte antigens (HLA) have been associated with renal function, but previous studies report contradictory findings with little consensus on the exact nature or impact of this observation. This study aims to discover HLA associations with renal function in a white British population.

Methods: This study included 401,307 white British subjects aged 39-73 when they were recruited by UK Biobank. Subjects' HLA types were imputed using HLA*IMP:02 software. Regression analysis was used to compare 362 imputed HLA types with estimated glomerular filtration rate (eGFR) as a primary outcome and clinical indications as secondary outcome measures.

Results: 22 imputed HLA types were associated with increased eGFR (and therefore increased renal function). Decreased eGFR (decreased renal function) was associated with 11 imputed HLA types, seven of which were also associated with increased risk of end-stage renal disease and/or chronic kidney disease. Many of these HLA types are commonly inherited together in haplotypes, and include specificities of the ancestral haplotype (AH) 8.1: HLA-A*01:01, B*08:01, C*07:01, DRB1*03:01, DQB1*02:01. This haplotype has a population frequency of 9.5% in England and each allele was associated with decreased renal function.

Discussion: 33 imputed HLA types were associated with kidney function in white British subjects. Linkage disequilibrium in HLA heritance suggests that this is not random and particularly affects carriers of AH 8.1. This could have important applications for the diagnosis and treatment of renal disease and global population health.

O38

Comparing outcomes in right versus left kidney transplantation; a systematic review and meta-analysis

Dr Caitlin Carolan[1], Dr Samuel James Tingle[2], Miss Emily Thompson[2], Mr Gourab Sen[2], Mr Colin Wilson[2]

[1]Northumbria Healthcare NHS Foundation Trust, Cramlington, United Kingdom. [2]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle-Upon-Tyne, United Kingdom

Introduction: Transplantation of right kidneys can pose technical challenges due to the short right renal vein. Whether this results in inferior outcomes remains controversial.

Method: We used Healthcare Database Advanced Search (HDAS) to identify studies comparing outcomes of right versus left kidneys. Two authors independently reviewed each study. Statistical analyses were performed using random effects models and results expressed as HR or relative risk (RR) with 95% confidence intervals. Subgroup analyses were performed in kidneys from deceased donors (DD) and living donors (LD).

Results: 36 studies (257,249 participants) were identified. Both deceased and living donor right kidneys were at increased risk of delayed graft function (DGF; RR=1.10[1.07-1.12] p<0.00001; Figure 1). In absolute terms, for each 100 kidney pairs of deceased donor kidneys transplanted there are 2.72 (1.67-3.78, p<0.00001) excess episodes of DGF in right kidneys. Graft thrombosis rate was also significantly higher in right kidneys, in both DD and LD settings (RR=1.55[1.41-1.69] p<0.00001; Figure 2). Compared to DD left kidneys, DD right kidneys were at significantly higher risk graft failure due to technical causes (RR=1.54[1.25-1.90], P< 0.0001). The two largest DD studies (179,124 participants) found right kidneys to have significantly poorer graft survival; time-varying analyses demonstrated this was caused by early graft losses within the first year post-transplant. When graft survival was meta-analysed there was significant heterogeneity in deceased donors (I^2 = 70%, p<0.001) and no evidence that laterality impacts of long term graft survival in living donors (1.07[0.90, 1.28], p=0.42).

Discussion: Right kidneys are at increased risk of early complications in both DD and LD settings, although the absolute effects are small. Improved vascular reconstruction techniques for the right renal vein which avoid detrimental impacts on ischaemia times are essential.

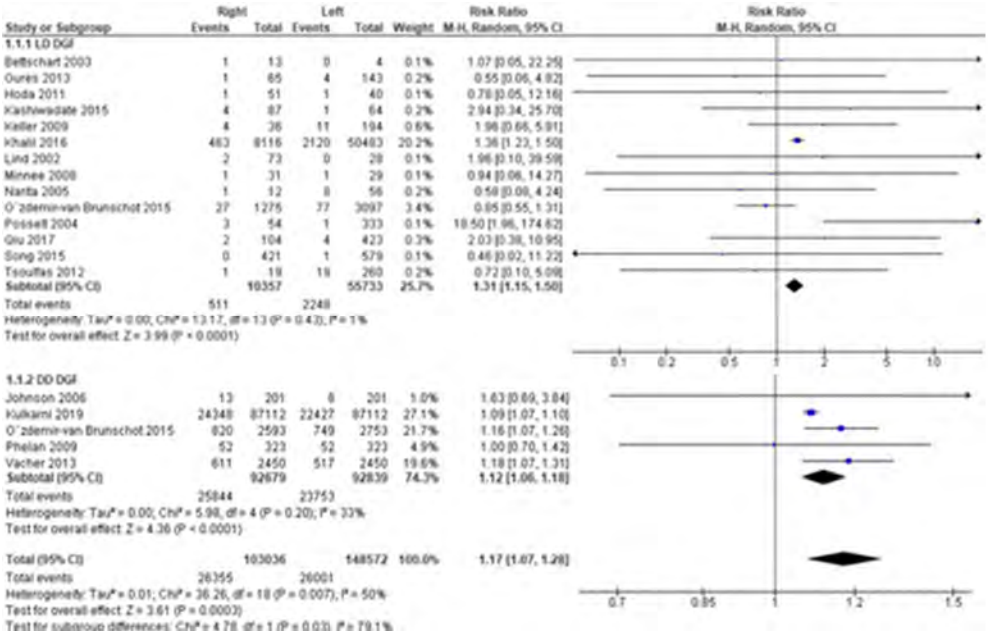


Figure 1: Forrest plot showing relative risk of DGF

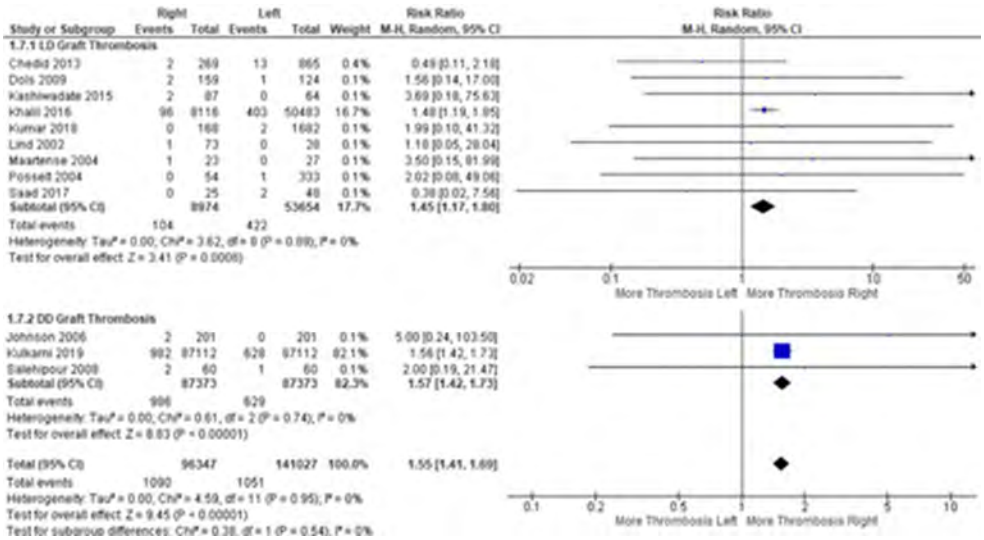


Figure 2: Forrest plot showing relative risk of graft thrombosis

O39

Design and implementation of an integrated transplant offer management system

Simon Knight[1,2], Jenny Fox[2], Simon Northover[2]

[1]University of Oxford, Oxford, United Kingdom. [2]Oxford Transplant Centre, Oxford, United Kingdom

Introduction: Transplant centres deal with large numbers of organ offers each day with the potential for communication difficulties and errors. However, the standard electronic health record does not provide the facility for recording sensitive donor information which cannot be stored in the recipient medical record. We sought to develop and implement an informatics solution to manage the offer process and aid both clinical management and audit, as well as achieving the trust goal of "paperless" working.

Methods: A web-based application was developed to document organ offers and outcomes, timings, anatomy, screening calls and transplants. Integration with other informatics systems allows automated retrieval of recipient and donor data. The system automatically flags offers potentially suitable for ongoing research projects and contacts lead investigators. File upload allows linking of organ photos and donor lab or pathology results. Multiple user accounts and roles are supported, with access limited to that required by a particular role. Reporting tools allow immediate visualization of offer rates, decline rates and transplant rates over time and by individual consultant surgeon. Iterative design involved input from the end users (both coordinators and surgeons) to ensure that the tool is fit for purpose.

Results: The system was implemented in August 2020 and has so far managed over 700 organ offers and 80 transplants. It has improved team communication during offer management, particularly hand-over between coordinators and communication of offer status between the coordinator, on-call surgeons, transplant ward and research teams. Integration of donor information and recipient information in an easy-to-use dashboard reduces the risk of errors and allows visualization of important information required during the consent process (figure 1). Reporting tools allow regular review and audit of decline decisions, including inter-consultant variation and declines due to logistical constraints (figure 2). Use of paper documents for recording of offer details has been eliminated.

Discussion: Implementation of an integrated, web-based offer management system has significantly improved our team communication, safety and ability to audit offer outcomes. The system has the potential for use in other transplant centres, and further integration with the NHSBT offer process.

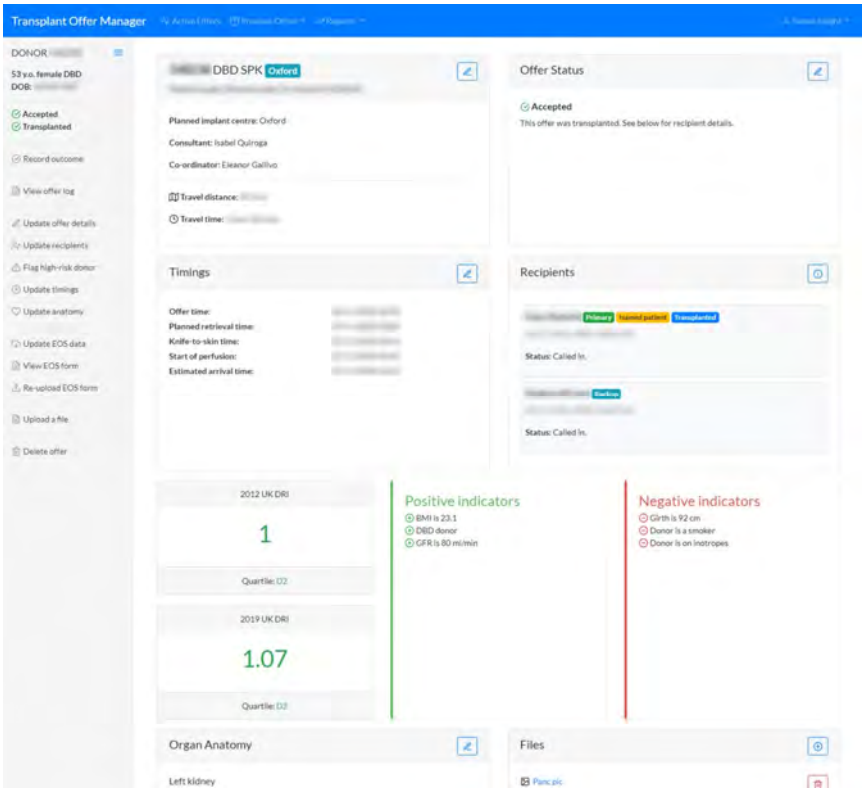


Figure 1 – The offer dashboard. Patient and donor details have been obscured.

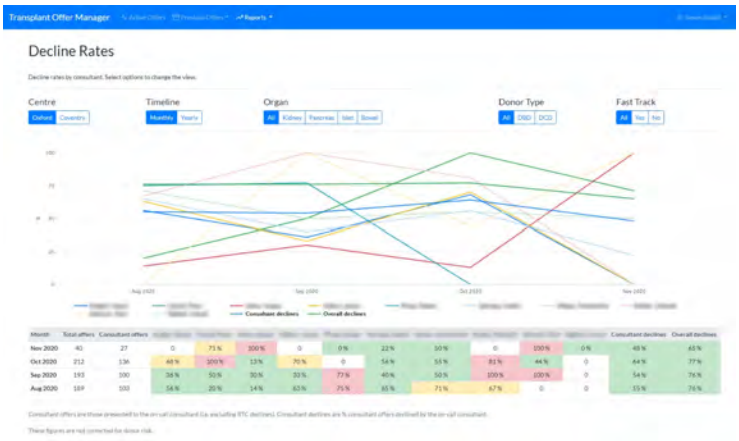


Figure 2 – Example reporting dashboard showing offer decline rates over time. Consultant details have been obscured.

O40

A national survey on enhanced recovery for renal transplant recipients: current practices and trends in the United Kingdom

Miss Carrie Scuffell, Dr Frankie Dowen, Mr Colin Wilson, Prof Derek Manas, Mr Aimen Amer

Freeman Hospital, Newcastle upon Tyne, United Kingdom

Introduction: Despite being established in many specialties, Enhanced Recovery after Surgery (ERAS) has not been widely adopted in renal transplantation. The aim of this survey was to understand current national practices and sentiment with regards to implementation of ERAS for renal transplant recipients in the UK.

Methodology: A national web-based survey was designed and sent to consultant surgeons at all 23 UK adult renal transplant units. Completed questionnaires were collected May-July 2020. The survey was designed to capture current perioperative practices in the period preceding the SARS-COV2 pandemic. Data was analysed according to individual responses and grouped according to transplant units where appropriate.

Results: All transplant units were represented. Three units had a formal ERAS pathway for all recipients. Of the remaining units, 65.9% considered implementing an ERAS pathway within 1yr. Perceived barriers to implementation included “imbedded culture within transplant units” and “complex background of transplant recipients” (54.8% and 45.2% of respondents respectively). Only 13.1% had a formal prehabilitation programme. A fifth of respondents would not routinely insert drains intraoperatively. Over two thirds routinely used 2-3 concomitant pain control modalities perioperatively, and only 11.7% routinely discontinued PCA’s on day 1. Most respondents routinely remove urinary catheters on day 5 (70%) and ureteric stents 4-6 weeks post-transplantation (81.7%). Median length of stay for deceased-donor kidney transplant recipients was lower in units with ERAS programmes (5-7d versus 8-10d respectively). The main barriers for discharge were cited as “suboptimal fluid balance” and “requirement of rejection treatment”. Components considered most important for ERAS included “early counselling and education” (86%), “goal directed fluid therapy” (73.7%), “early mobilisation” (98.2%) and “early postoperative patient-education” (86%).

Discussion: Despite slow uptake of ERAS in kidney transplantation, appetite is increasing particularly in the post COVID era. The opinions of transplant specialists have been highlighted and may help with standardisation of a future ERAS protocol.

O41

Long term renal outcomes in living donors with asymptomatic nephrolithiasis

Dr Christopher Seet, Dr Raj Thuriasingham, Dr Ravi Rajakariar, Dr Hamish Dobbie, Miss Cinzia Sammartino, Mr Ben Lindsey, Mr Rajesh Sivaprakasam, Mr Vasillis Anastassiou, Mr Ismail Mohamed, Mr Muhammad Arslan Khurram

Bart's Health NHS Trust, London, United Kingdom

Introduction: Renal calculi can be discovered incidentally during the assessment of a potential living kidney donor. The use of donors with a history of nephrolithiasis is increasing around the world. We aimed to determine if the presence of asymptomatic calculi detected incidentally on CT scans had any effect on long term renal function and the likelihood of developing symptomatic nephrolithiasis after donation.

Methods: We conducted a retrospective analysis of 309 CT scans at centre for the assessment of potential kidney donors between 2012 and 2020. Donors with calculi identified on CT were compared to a random sample of 30 donors with no history of symptomatic nephrolithiasis. Patients were followed up for up to 6 years (1-6 years) years and 6 week, 1, 2, and 3-year mean creatinine were compared. The incidence of symptomatic nephrolithiasis was also assessed.

Results: 3.2% (10/309) donors had calculi identified on CT, ranging from 2-5mm and all of which were non-obstructing. There were no episodes of symptomatic UTIs. There was no difference in mean creatinine 6 weeks, 1, 2, or 3-years (p=0.11, 0.07, 0.63, 0.23, respectively). None of the donors in either group had symptomatic nephrolithiasis or required any intervention for calculi at 3 years follow up.

Discussion: The presence of incidental renal calculi did not impact donor kidney function post-donation in our cohort. Our data suggests that the risk of post-donation symptomatic stone episodes is also low. Routinely stone screening in patients who have a history of stones or with calculi identified on CT, may have contributed to the lack of symptomatic nephrolithiasis episodes post donation. Longer term follow up with a larger population is also required to validate these findings.

O42

Implementation of an enhanced recovery after surgery program for donor nephrectomy: West of Scotland experience

Mrs Ruth Gittins, Mrs Julie Glen, Mr Andrew Jackson, Dr Iain Thomson, Miss Karen Stevenson

Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: NHS Blood and Transplant published a UK strategy that set very clear goals to increase the number of LDKT's to 26pmp by 2020. Optimisation of the living donor nephrectomy patient pathway and clinical course is key to improve patient experience and care. A retrospective audit by the surgical and coordinator team and further prospective audit of perioperative anaesthetic care were performed throughout 2017- 2019 and identified areas of variation in processes of care which could be optimised. An Enhanced Recovery after Surgery (ERAS) pathway was formally implemented in June 2020 which encompassed preoperative counselling, fasting minimisation, same day admission, perioperative care including intrathecal morphine, Erector Spina Plane (ESP) block local anaesthetic catheters and early mobilisation.

Methods: Data were abstracted from in-patient hospital notes and electronic patient records. The outcome of the first 20 patients to complete donor nephrectomy ERAS were prospectively audited from 24/6/2020 to 12/11/2020. Preoperative assessment investigations, length of postoperative stay and objective measures of in hospital stay were recorded and compared to previously audited data.

Results: Donor nephrectomies performed were 47(2018), 53 (2019) and 20 (2020 thus far) and donor age ranged from 24 to 73 years. Duplication of biochemical tests reduced and there was a significant reduction in use of patient controlled parenteral opioid (66.1 % v 5%) and increase in use of ESP block / wound catheter analgesia (52.8% to 95%). Length of post-operative stay was reduced from a mean of 5 days (2018) to 3.96 days (2019) to 3.35 days (ERAS). 30% of ERAS patients were discharged on day 2 and 75% on day 3 with no readmissions.

Discussion: This ongoing quality improvement work has significantly improved the pathway of care for donor nephrectomy patients and highlights areas of care that can facilitate ward level 1 care whilst optimising donor outcomes.

O43

Outcomes for potential living kidney donors- the Glasgow Experience 2017-2020

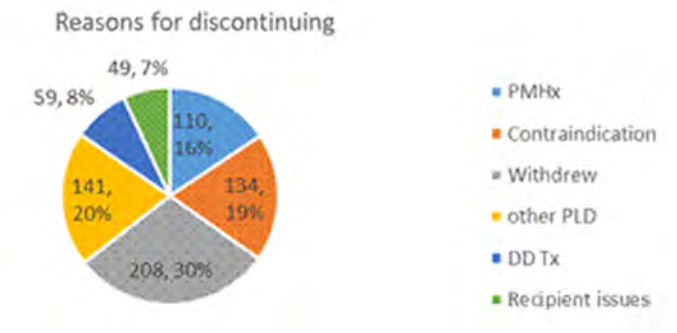
Mrs Julie Glen, Dr Raj Patel

Glasgow Renal and Transplant Unit, Glasgow, United Kingdom

Introduction: Living Donor Kidney Transplantation has long been recognised as the 'Gold Standard' renal replacement therapy for those patients deemed suitable. This study aimed to identify common themes for donors not progressing to donation in the hope that these donors can be identified early to allow for streamlining of the assessment process and focusing of resources.

Methods: A retrospective patient electronic record search was performed to identify all potential donors who had assessment for living kidney donation discontinued during a 3 year period from 1st of April 2017 to the 31st of March 2020. Potential donors lived within GGC catchment area or were referred to GGC from other UK health boards for assessment or completion of their assessment. The reason for discontinuation was identified and documented along with baseline demographics.

Results: During the 3 year period 945 donor referrals were received, 152 subjects proceeded to donation and 701 donors had their assessment discontinued. 54% of those donors were female. Age ranged from 17 to 84 years. The pie chart displays the results. Contraindications were found in 19% with only 7% of donors being ruled out as their renal function was below the threshold for donation. Age was significant when comparing the groups that withdrew, were ruled out on PMHx or where a contraindication was identified.



Discussion: This study highlights the volume of foot traffic through the Live Donor programme with 50% of donors withdrawing from the assessment process. It is reassuring that the Health Check questionnaire used to screen donors at the time of registration successfully identifies past medical history that precludes donation reducing the number of hospital appointments. Donors are provided with information, written or online, and are encouraged to read through this prior to their first appointment in the hope that they will be fully informed and committed to the process when they attend. It is difficult to identify the reasons people withdraw from assessment as they often miss appointments or are lost to follow up. However these donors create a substantial work load for a valuable and already over stretched clinical resource. We propose an early education of potential donors using remote resources to ensure they are fully aware of the process and time commitments required.

O44

The United States transplantation network impacted by COVID-19

Dr Rebecca Goff, Dr Amber Wilk, Mrs Alice Toll, Dr Maureen McBride, Dr David Klassen

United Network for Organ Sharing, Richmond, USA

Introduction: COVID-19 has been sweeping the globe, hitting the US particularly hard. Transplant hospitals have taken precautions to protect patients from potential exposure. As of 9/6/20, compared to the same time period in 2019, US deceased donor volume is up (8,397 vs. 7,957) but transplant volume remains lower (26,097 vs. 27,015), mostly driven by a decrease in living donation transplantation. The long-term impacts of COVID-19 on the transplant system remains unknown, but the initial impact on organ transplantation in the US was profound.

Methods: Organ Procurement and Transplantation Network donor, candidate, and transplant data for kidney, liver, heart and lung was described between 1/5/2020-9/5/2020.

Results: The number of new transplant candidates decreased in March with substantial decreases up to 50% seen in certain regions of the country. By May, registrations increased; however, by September new registrations continued to remain approximately 10% below pre-pandemic levels. The use of a new COVID-19 waitlist candidate inactivation code peaked in March but remained low from May to September. The number of deceased donors recovered for transplant decreased in March; the reasons for donor cause of death remained stable. As of 9/7/20, nearly 100% of donors indicated COVID-19 testing results in DonorNet and no positive results provided indicated active infection. Lungs recovered for transplant were down greater than 50% in some weeks but rebounded by June. Transplant volumes decreased substantially beginning in March with a rebound in April. There was a near cessation of kidney and liver living donor transplants in April and revival in July.

Figure 1: Volume of deceased donors recovered in the US by week from 1/5/20-9/5/20

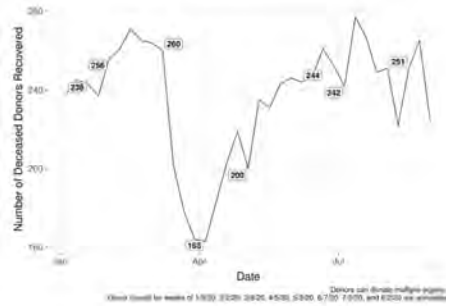
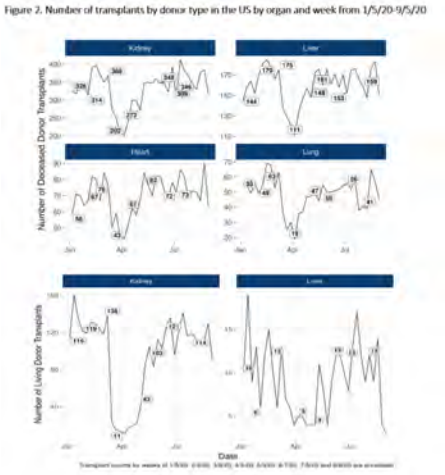


Figure 2. Number of transplants by donor type in the US by organ and week from 1/5/20-9/5/20



Discussion: Although the COVID- 19 pandemic continues to evolve, data shows recent evidence of stabilization in the US. The US transplant system has shown resilience in the face of COVID-19 and continues to get lifesaving organs to candidates in need.

O45

Cardiothoracic transplantation and the first wave of the SARS-CoV-2 pandemic in the UK

Miss Gillian Hardman[1,2], Miss Ruth Sutcliffe[3], Miss Rachel Hogg[1], Prof Ulrich A Stock[4], Prof Stephen Clark[2], Dr Stephen Pettit[5], Prof Nawwar Al-Attar[6], Miss Karen Booth[2], Prof John H Dark[7], Prof Andrew J Fisher[7,2]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]Institute of transplantation, Freeman Hospital, Newcastle upon Tyne, United Kingdom. [3]Wythenshawe Hospital, Manchester, United Kingdom. [4]Royal Brompton and Harefield NHS Foundation Trust, London, United Kingdom. [5]Royal Papworth Hospital NHS Foundation Trust, Cambridge, United Kingdom. [6]Golden Jubilee National Hospital, Glasgow, United Kingdom. [7]Newcastle University Translational and Clinical Research Institute, Newcastle upon Tyne, United Kingdom

Introduction: From March 2020, demand on healthcare capacity, concerns for transplant recipients, including the risks of nosocomial infection, and the safety and availability of donors, caused by the severe acute respiratory syndrome coronavirus (SARS-CoV-2) pandemic, lead to practice change in cardiothoracic transplantation. The aim of this study is to evaluate the impact of these changes.

Methods: Data were obtained from the UK Transplant Registry (UKTR). The early pandemic period is defined as 1 March to 31 May 2020. Comparison is made with data from the same period of 2019. To explore centre-level variation in practice, a national survey of cardiothoracic transplant centres was performed.

Results: Survey return rate was 100% (7 centres). Centre-level decision making was dynamic, in response to perceived risks for candidates, the local prevalence of infection and hospital resource demand, impacted by designation as an ECMO (extra-corporeal membrane oxygenation) centre (2 centres) and 'COVID-light' (1 centre). During the early pandemic period, 12 lung transplants were performed, compared to 53 for the same period of 2019 (77% reduction), 58% (7/12) lung transplants were performed in 1 centre (designated 'COVID-light'). Thirty-eight heart transplants were performed, compared to 41 in 2019, (7% reduction). There was a borderline significant increase in paediatric heart recipients (p=0.072). There was no difference in the use of mechanical circulatory support. Heart utilisation increased to 35% (from 26%). Lung utilisation fell to 10% (from 24%). Death on the lung waiting list increased significantly (from 12 to 21 deaths, p=0.0118). There was no difference in mortality on the heart transplant list.

Discussion: The contrasting experience of heart and lung transplantation during the early pandemic period is evident. As the pandemic continues, maintaining both heart and lung activity is essential. Facilitating this requires on-going review of practice, provision of robust testing and protected *COVID-light* areas.

O47

Pre-operative chest computed tomography as an adjunct to RT-PCR testing in renal transplantation during COVID-19 pandemic: helpful or unnecessary? A multi-centre retrospective case series

Mr Ahmed Ghoneima[1], Mr Robert Pearson[2], Ms Emma Aitken[2], Mr Stuart Falconer[1], Mr Adam Barlow[1]

[1]St. James's University Hospital, Leeds, United Kingdom. [2]Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: The COVID-19 pandemic represents a challenge in renal transplantation. The use of pre-operative chest computed tomography (CT) has been used in some transplant units as an adjunct to reverse transcription polymerase chain reaction (RT-PCR) to augment exclusion of disease in this asymptomatic, but at risk, patient group. We present data from two UK transplant centres which utilised pre-operative CT imaging to facilitate transplantation during the pandemic and reflect on its utility.

Methods: This is a retrospective analysis of prospectively collected data from April to October 2020 across two UK renal transplant units). All recipients of deceased and living donor transplants and potential recipients whose transplants did not proceed were included. Endpoint data included RT-PCR testing, use of chest CT imaging in the pre-operative period, subsequent pulmonary investigation and reason for not proceeding to transplant, where applicable.

Results: 122 patients were transplanted during the study period. 94 (77.0%) of all proceeding transplants had pre-operative CT chest. Mean recipient age 45.4 years. All recipients had negative SARS-Cov-2 RT-PCR on admission. A further 32 CTs were performed in patients whose transplants did not proceed. No pre-operative CT demonstrated classical or probable COVID. However, 10 (7.9%) CTs identified abnormalities which precluded transplantation: 5 indeterminate COVID (CVCT2); 3 non-COVID pulmonary changes (CVCT3); 1 indeterminate lymphadenopathy; 1 breast calcification necessitating further investigation. Indeterminate CT findings were more likely in patients with diabetes and advancing age.

Conclusion: The use of CT chest provided an extra layer of confidence in excluding COVID-19 in this at risk recipient cohort. However, with low community prevalence in an asymptomatic shielding population, CT may be of limited benefit. If incidence is rising or in the absence of strict shielding guidance, it provides the reassurance necessary for safe transplantation. On a further note, Pre-operative imaging undertaken during this study highlighted incidental findings which, in a time critical environment, precluded transplantation.

Pt	SATT report	Age	PMH	Diabetes / HTN	Dialysis status	Initial CT findings and concerns at time of offer
1	CVCT3	58	APKD	N / Y	HD	Bacterial pneumonia- transplant cancelled
2	CVCT3	69	Diabetes	Y / Y	HD	Active mycobacterium infection – transplant cancelled
3	CVCT2	63	Diabetes	Y / N	HD	Mixed picture of new mediastinal and hilar lymphadenopathy with widespread ground glass opacification, initially reported as CVCT3- transplant cancelled
4	CVCT2	56	APKD	N / Y	HD	Previous positive RT-PCR >28 days prior to admission; 2 x negative RT-PCR at time of admission. CT Chest identified ground glass opacification=transplant cancelled
5	CVCT2	44	Diabetes	Y / Y	HD	Patchy opacification initially reported as CVCT2- transplant cancelled
6	Incidental finding	50	Reflux nephropathy	N / Y	HD	Bilateral breast calcification- transplant cancelled
7	CVCT2	60	Diabetes	Y / N	HD	Bilateral subpleural ground glass opacification within lower lobes- initially reported as CVCT2
8	CVCT2	58	Unknown	N / Y	HD	Non-specific ground glass opacification in right upper lobe and both lower lobes (CVCT2)
9	Incidental finding	59	Glomerulo-sclerosis	N / N	HD	Background of chronic lymphocytic leukaemia. Bilateral axillary and mediastinal lymphadenopathy with interval progression from previous imaging- transplant cancelled
10	CVCT3	50	Vasculitis	Y / Y	HD	3x5cm mass with surrounding ground-glass halo adjacent to posterior chest wall. Suspected fungal pneumonia or aspergilloma – transplant cancelled

Table 1. Case detail of non-proceeding transplants due to CT Chest findings

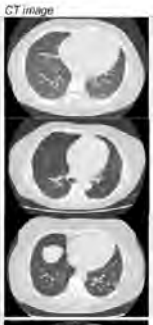
Patient	CT image	Findings
3		CVCT2 – Mixed picture of new lymphadenopathy and patchy ground glass opacification - reclassified as CVCT3 following respiratory MDT
4		CVCT2 – peripheral ground glass opacification indeterminate for COVID-19 infection – reclassified as CVCT1 following respiratory MDT
5		CVCT2 - Bibasal atelectasis with ground glass opacification indeterminate for COVID-19 infection - reclassified as CTCV3 following respiratory MDT
7		CVCT2 - Bilateral subpleural ground-glass changes within the lower lobes and right upper lobe- reclassified as CTCV3
8		CVCT2 - Non-specific ground glass opacification in right upper lobe and both lower lobes

Table 2. CT images of those initially reported as CVCT2

O48

SARS-CoV-2 antibody responses in wait-listed patients for renal transplantation

Dr A Jaffer[1], Dr L Muir[2], Dr V Gopalan[1], Dr R Fernando[1,3], Mr F Chang[1,4], Dr A Vaitkute[4], Professor A Salama[1], Dr L McCoy[2], Mr R Motallebzadeh[1,4]

[1]Department of Nephrology & Transplantation, Royal Free London NHS Trust, London, United Kingdom. [2]Division of Infection and Immunity, University College London, London, United Kingdom. [3]Anthony Nolan Institute, London, United Kingdom. [4]Research Department of Surgical Biotechnology, University College London, London, United Kingdom

Introduction: Patients with end-stage kidney disease (ESKD) represent an extremely vulnerable group with a number of risk factors for adverse outcomes following SARS-CoV-2 viral infection. Some of the key questions pertaining to ESKD wait-listed patients for transplantation include attaining a precise understanding of the seroconversion rate, quantifying the rate of asymptomatic infection and determining if seroconverted patients have functional neutralising activity against SARS-CoV-2. The study of the immunological characteristics of COVID-19 in ESKD patients may help the design of an effective vaccination strategy against SARS-CoV-2 for potential transplant recipients.

Methods: Serum samples, taken at a median of 23 days (IQR 20-44) post PCR testing, were analysed by direct ELISA to detect anti-SARS-CoV-2 IgG antibodies using a recombinant Spike $S1_{1-530}$ subunit protein. Recombinant human anti-SARS-CoV-2 mAb that binds to spike receptor binding domain was used as positive control. Neutralization potency against SARS-CoV-2 was measured using HIV-1 luciferase-based pseudotype assays. Titres of neutralising antibodies were calculated as 50% inhibitory dose (ID50), expressed as the highest dilution of plasma which resulted in 50% reduction of luciferase luminescence compared with controls.

Results: 217 patients were on the wait-list as of May 2020 (115 receiving in-centre haemodialysis [ICHD], 41 on peritoneal dialysis and 61 pre-dialysis). 149 serum samples, of which 76% were obtained by June 2020 and coincided with the first peak of the pandemic in UK, were analysed (see figure 1). The observed seroprevalence of SARS-CoV-2 antibodies was 29.5% (95% CI 25.7-38.9). Seroconverted patients were more frail (median Clinical Frailty Scale score 3 [IQR: 3-4] vs 3 [IQR: 2-3]; p=0.001), predominantly from BAME background (75.6% vs 58.1%, p=0.08), diabetic (43.2% vs 16.9%; p=0.002) and receiving ICHD (93.2% vs 63.5%; p=0.001). Levels of anti-SARS-CoV-2 IgG strongly correlated with ID50 (r=0.61; p<0.0001). Peak CRP levels were positively correlated with ID50 (r=0.38; p=0.02).

Discussion: Analysis of titres of anti-S1 antibodies and neutralising activity suggest robust functional responses are produced in ESKD patients that have recovered from COVID-19. The level of functional immunity to SARS-CoV-2 in patients with ESKD may be used to risk stratify patients on national waiting-lists for renal transplantation and will help evaluate the efficacy of vaccination schedules in wait-listed patients once this becomes available.

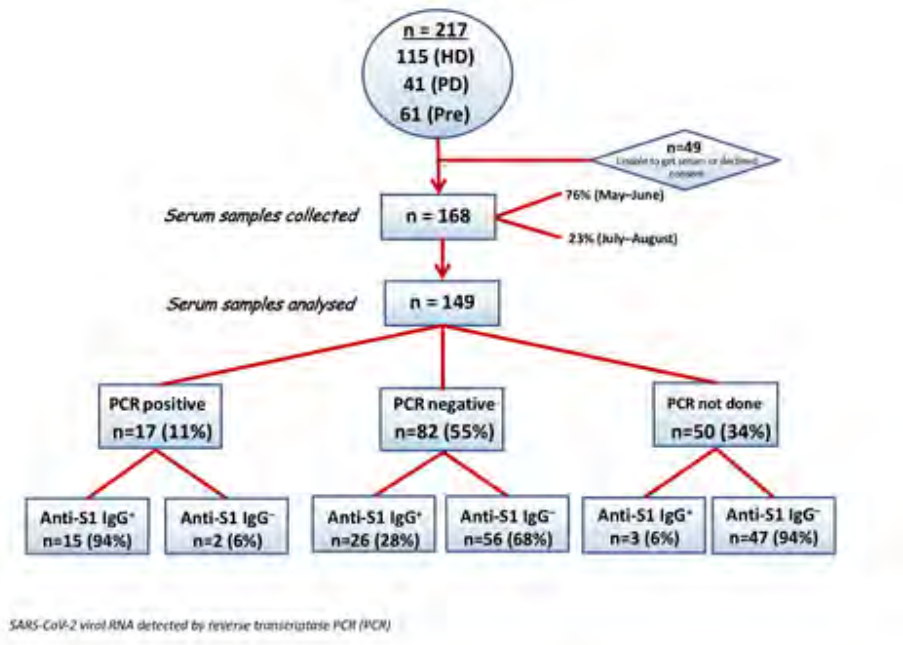


Figure 1 - Flow of Study Participants

O49

Pancreas transplantation during the COVID-19 Pandemic. A single centre's experience

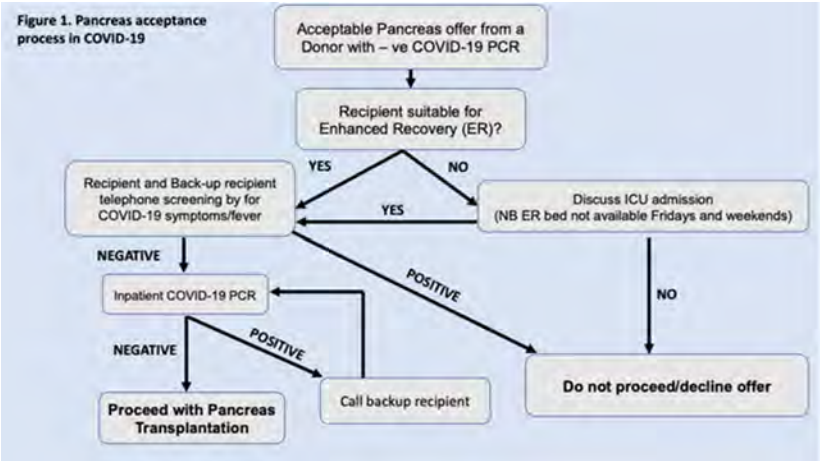
Miss Ann Etohan Ogbemudia[1,2], Mr Fungai Dengu[1,2], Mr Simon Knight[1,2], Mr Richard Dumbill[1,2], Mr Faysal El-Gilani[1,2], Mr Simon Northover[2], Mrs Kim Corbey[2], Mrs Andrea Devaney[2], Mr Srikanth Reddy[2], Miss Isabel Quiroga[2], Mr James Gilbert[2], Mr Venkatesha Udupa[2], Dr Paul Harden[2], Dr Phil Mason[2], Professor Paul Johnson[2], Dr Edward Sharples[2], Professor Rutger Ploeg[1,2], Professor Peter Friend[2,1], Mr Sanjay Sinha[2]

[1]Nuffield Department of Sciences, University of Oxford, Oxford, United Kingdom. [2]Oxford Transplant Centre, Oxford, United Kingdom

Introduction: The ongoing COVID-19 pandemic has led to significant reduction in pancreas transplantation (PT) activity. On 9thMarch 2020, we suspended 64 patients on our PT waiting list, excluding 4 highly sensitized patients eligible for kidney transplantation. The primary reasons for suspension were the perceived risk with the use of alemtuzumab (lymphocyte depleting induction) and constrained access to intensive care. Our PT program successfully resumed on 4th August 2020 through the adoption of new strategies and creative resource management. We share our experience as well as the clinical outcomes of the first cohort of 13 discharged patients transplanted during the pandemic.

Methods

1. We created a central operating group (COG), a multidisciplinary team that met regularly and were solely tasked with resuming PT in safe manner whilst fitting into competing hospital resources
2. We capitalised on our strengths namely being situated in "Covid-19 free" hospital site and were able to predict a seamless resumption due to the ongoing operational infrastructure maintained by the kidney transplantation program
3. Patients were updated regularly and encouraged to continue sending monthly blood samples for tissue typing
4. Enhanced Recovery (ER) was created to ease demands on ICU capacity, an area of beds in surgical recovery supported by both recovery and transplant nurses to provide level 2 (HDU) care
5. Using outcomes from pre-COVID-19 PT data we were able to select recipients suitable for ER and define a PT acceptance process **(figure 1)**
6. We revised our donor and recipient characteristics criteria to improve transplantation rates and outcomes
7. We gained support from microbiology to provide 24 hr rapid COVID-19 PCR access (CEPHEID GeneXpert)



Outcome: Our donor and transplant recipient demographics and outcomes are summarised in **table 1**.

Table 1. Donor and transplant recipient demographics and outcomes

Parameter (mean ± STD)	13 transplants
Transplant type (SPK/PTA)	12/1
Donor Age, years	37.4 ± 11.9
Donor Type (DBD/DCD)	9/4
Donor BMI	21.9 ± 3.7
Donor Girth (cm)	78.2 ± 7.2
Recipient Age, years	43 ± 10
Recipient Sex (M/F)	6/7
Recipient BMI	24.7 ± 3
RRT HD/PD/Predialysis	6/4/2
Number of HLA mismatches	3.6 ± 1
Mean Calculated Reaction Frequency	12.8 ± 12.9
Cold ischaemia time, hours	10.9 ± 1.8
Kidney DGF rate (%)	1/12 (8%)
Return to theatre during initial admission	0%
Functioning grafts at discharge	100%
Length of hospital stay, days	11.9 ± 3.8
Number of days since transplant, mean (range)	73 (21 - 98)
Acute Rejection episodes	1/13 (7%)
Readmission in 30 days	3/14 (21%)
Complications*	5/14(29%)
SARS-CoV-2 positive recipients to date	0

*Complications (n = 5)
1) Suspected SPK rejection, readmitted and treated with high dose methylprednisolone
2) Readmission with mechanical small bowel obstruction requiring laparotomy
3) Readmission with acute kidney injury from dehydration and vomiting
4) Readmission with acute kidney injury from dehydration and
5) Clostridium difficile infection managed with antibiotics and supportive care.

Discussion: Our early results following our rigorously revised PT program provides evidence that we can continue pancreas transplantation into the second COVID-19 wave with alemtuzumab induction without exposing our patients to additional risks.

O50

Patient reported incidence of COVID-19 infection and related symptoms in a shielded population of solid organ transplant recipients during the first wave of the COVID-19 pandemic. Results from the COVID-Transplant survey

Mr Hanns Lembach Jahnsen[1], Miss Siobhan McKay[1], Mr Angus Hann[1], Mr Kelvin Okoth[2], Ms Laura Magill[2], Ms Barbara Tolinska[3], Mr Matthew Armstrong[1], Mr Jorge Mascaro[4], Mr Nicholas Inston[5], Prof. Thomas Pinkney[2], Mr Aron Ranasinghe[4], Mr Richard Borrows[6], Mr James Ferguson[1], Mr John Isaac[1], Prof Melanie Calvert[3], Mr Thamara Perera[1], Ms Hermien Hartog[1]

[1]The Liver Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom. [2]Birmingham Centre for Observational and Prospective Studies (BiCOPS). University of Birmingham, Birmingham, United Kingdom. [3]Centre for Patient Reported Outcomes Research, Institute of Applied Health Research, University of Birmingham, Birmingham, United Kingdom. [4]Cardiothoracic Surgery, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom. [5]Renal Surgery Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom. [6]Renal Medicine Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom

Introduction: During the first-wave of COVID-19, clinically extremely vulnerable individuals, such as solid organ transplant (SOT) recipients, received Public Health advice to shield from March 30th to July 31st. Information regarding the incidence of COVID-19 in shielded populations is currently limited.

Methods: After ethical approval to conduct a cross-sectional survey of adult SOT recipients at a regional transplant centre, eligible patients were invited to complete a secure online survey, between 3rd-31st July 2020. The survey included demographic, organ transplant, immunosuppression and general health items. In addition, it included questions regarding self-reported COVID-19 infection status, symptoms and course of illness.

Results: 826/3839(21.5%) recipients completed the survey. The demographic, organ transplant and general health characteristics of the responders is displayed in table 1. In summary, a majority (72%) were liver transplant patients; 61% had more than 5 years of follow up; and 365(44%) reported comorbidities. 67% used more than one immunosuppressive drug. Shielding advice was followed by 96% (n=793). Eight patients (0.9%) declared COVID-19 infection with a positive test and 19 patients (2.3%) declared a suspected infection not confirmed with testing. 46 (5.5%) reported someone in their immediate social environment tested positive. Regarding symptoms, 14 patients (1.6%) declared a combination of 2 or more core symptoms for COVID-19 (temperature, new cough, anosmia). 74% of the patients declared no symptoms. Symptoms lasted a median of 7 days, 89% resolved with home-based care and 5.3% were admitted to hospital for a median of 4.5 days. In this cohort, no patients declared ITU admission.

Discussion: While reported numbers in this survey are potentially biased by limited access to testing during the first wave of COVID pandemic and a potential responder bias towards mild-to-moderate cases, we conclude that self-reported COVID infection rates during the first wave of the pandemic were low in a shielded population of SOT recipients.

Table 1: Overall characteristics of respondents of the COVID Transplant Survey

COVID Transplant n=826	**N (%)**
Age Distribution	
18-25	18 (2)
26-35	54 (6)
36-45	71 (8)
46-55	175 (22)
56-65	240 (28)
66-75	228 (28)
>76	44 (6)
Gender	
Female	356 (43)
Male	469 (57)
Ethnicity	
BAME	54 (7)
Medical comorbidities	
Diabetes	140 (17)
Mental health	166 (20)
Hypertension	456 (55)
Heart disease	74 (9)
Chronic lung disease	65 (8)
End stage renal failure	6 (1)
Obesity	203 (25)
Organ Transplanted	
Liver	595 (72)
Heart	66 (8)
Lung	23 (3)
Kidney	162 (20)
Pancreas	2 (0)
Time since transplant (Months)	
< 1 year	58 (7)
1-5 years	262 (32)
> 5 years	505 (61)
Level of Immunosuppression	
Monotherapy	269 (33)
Dual or triple therapy	554 (67)
Steroid use	312 (38)
Number of house-hold members	
Lives alone	121 (15)
One other person	425 (51)
3 or more	280 (34)

Abbreviations: BAME: Black, Asian and Minority Ethnic.

Table 2: Reported SARS-CoV-2 infection rate in National and Regional areas, compared to COVID Transplant survey by organ transplanted.

	UK			Midlands			COVID Tx Survey				
	Recipients (n)	SARS-CoV-2 +ve (n)	%	Recipients (n)	SARS-CoV-2 +ve (n)	%	Recipients (n)	SARS-CoV-2 +ve (n)	%	Chi-sq	P-value
Kidney	39145	595	1.52%	5678	85	1.50%	162	2	1.2%	0.1038	0.949
Liver	10632	82	0.77%	1678	7	0.42%	595	4	0.6%	2.5602	0.278
Heart/Lung	4160	55	1.32%	669	10	1.49%	89	2	2.2%	0.656	0.7203
Total	53937	732	1.36%	8025	102	1.27%	846	8	0.9%		

O51

Solid organ transplant recipients' risk perceptions, shielding behaviour and public trust during the COVID-19 Pandemic. Report from the COVID-transplant survey

Mr Angus Hann[1,2], Mr Hanns Lembach[1], Mrs Siobhan McKay[1,2], Dr Kelvin Okoth[3], Dr Laura Magill[3], Dr Barbara Torlinski[4], Dr Matthew Armstrong[1], Mr Jorge Mascaro[1], Mr Nicholas Inston[1], Professor Thomas Pinkney[3], Mr Aaron Ranasinghe[1], Dr Richard Borrows[1], Dr James Ferguson[1], Mr John Isaac[1], Professor Melanie Calvert[4], Mr Thamara Perera[1], Mrs Hermien Hartog[1]

[1]Queen Elizabeth Hospital, Birmingham, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom. [3]Birmingham Centre for Observational and Prospective Studies (BiCOPS), Birmingham, United Kingdom. [4]Centre for Patient Reported Outcomes (PROs) Research, Birmingham, United Kingdom

Introduction: Solid organ transplant (SOT) recipients are particularly impacted by the COVID-19 pandemic. In order to provide effective communication to SOT recipients, it is important to understand their perceptions of risks relating to COVID-19, preventive behaviour and concerns. Our aim was to assess these perceptions and concerns in the SOT recipient population.

Methods: After ethical approval to conduct a cross-sectional survey of adult SOT recipients at a regional transplant centre, eligible patients were invited to complete a secure online survey, between 3rd–31st July 2020. The survey included demographic, transplant, shielding and health items. In addition, a modified version of the World Health Organisation COVID-19 survey tool was used.

Results: 826/3839 recipients completed the survey. The demographic, transplant and general health characteristics are displayed in Table 1. Shielding advice was followed by 96% (n=793). The probability of contracting COVID-19 was perceived as extremely or somewhat likely in 26.9%, and a high level of knowledge regarding how to protect themselves from COVID-19 was reported on a visual analogue scale (94/100, 0=Don't know at all, 100=know very well). The median perceived susceptibility to infection was 78/100 (0=not at all susceptible, 100=very susceptible) and respondents believed they would be severely unwell with COVID-19 (91/100, 0=not severely unwell, 100=severely unwell) (Table 2). 201 (24.4%) responders reported their access to healthcare had been compromised during shielding, putting them at potential risk. Compared to local health care facilities and government, SOT recipients had the greatest trust in their transplant centre to manage COVID-19 well (95/100, 80-100).

Discussion: Perceived susceptibility to severe COVID-19 may contribute to higher shielding adherence, which consequentially reduces their perception of risk. A high level of confidence in the professionals at the transplant centre was reported. Transplant centres should play an important role communicating evidence-based information to this patient group and preserving access to healthcare.

Table 1: Demographic, transplant and health characteristics of survey responders

	Survey responders (n=826)
Age, median (IQR)	60 (50-67)
Female	355 (43%)
Type of transplant	
Liver	595 (72.2%)
Lung	23 (2.8%)
Heart	66 (8.0%)
Kidney	161 (19.5%)
Pancreas	2 (0.1%)
Time since transplant	
<6 months	13 (1.6%)
6 months-1 year	45 (5.5%)
1-2 years	74 (9.0%)
2-5 years	188 (22.8%)
>5 years	503 (61.0%)
Shielded during pandemic	791/824 (96.0%)
Diabetic	140 (17.0%)
Obese	267 (32.0%)
Dialysis	6 (0.7%)
Heart disease	74 (9.0%)
Chronic lung disease	65 (7.9%)
Current smoker	38 (4.6%)

Table 2: Solid organ transplant perceptions of risk, knowledge and confidence

	Responders (n=826)
Do you know people in your immediate social environment who are or have been infected with COVID 19?*	
Yes, tested and the result was positive	47 (5.7%)
Yes, suspected but not confirmed by a test	43 (5.2%)
No, tested and the result was negative	29 (3.5%)
No	655 (79.5%)
Don't know	50 (6.1%)
What do you consider to be your own probability of getting infected with COVID-19?*	
Extremely likely	77 (9.3%)
Somewhat likely	145 (17.6%)
Neither likely nor unlikely	228 (27.7%)
Somewhat unlikely	251 (30.5%)
Extremely unlikely	123 (14.9%)
How susceptible do you consider yourself to be to an infection with COVID-19?* *0-100 Scale, 0= Not at all susceptible 100=Very susceptible* (IQR)	78 (50-95)
How severe do you think contracting COVID-19 would be for you (in other words how seriously ill do you think you would become)?* *0-100 Scale, 0= Not severely unwell 100=Very unwell* (IQR)	91 (80-100)
Do you know how to protect yourself from COVID-19?* *0-100 Scale, 0= Don't know at all 100=Know very well* (IQR)	94 (83-100)
For me avoiding an infection with COVID-19 in the current situation is? *0-100 Scale, 0= Extremely difficult 100=Extremely easy* (IQR)	75 (50-88)
How much confidence do you have in the below individuals and organisations that they can handle COVID-19 well?* *0-100 Scale, 0= No confidence 100=Very confident* (IQR)	
The specialist doctors and nurses of the transplant unit	95 (80-100)
Your own family doctor/GP	75 (50-90)
Your local hospital	75 (50-90)
Department of Health	51.5 (41-80)
The Government	50 (22-72)
Has your access to healthcare been compromised due to shielding, putting you at potential risk?	
Yes	201 (24.4%)
No	623 (75.6%)

* Questions adapted from the World Health Organisations (WHO) tool for behavioural insights on COVID-19 to assess risk perceptions, behaviours, trust and knowledge. Available at: https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/publications-and-technical-guidance/risk-communication-and-community-engagement/who-tool-for-behavioural-insights-on-covid-19/survey-tool-and-guidance-behavioural-insights-on-covid-19-produced-by-the-who-european-region

O52

Protein profiles in deceased donor kidneys associated with 12-month post-transplant kidney function

Ms Priyanka Joshi[1], Dr Philip Charles[1], Ms Rebecca Vaughan[2], Professor Benedikt Kessler[1], Dr Alberto Santos[1], Professor Rutger Ploeg[1,2], Dr Maria Kaisar[1,2]

[1]University of Oxford, Oxford, United Kingdom. [2]NHS Blood and Transplant, Bristol, United Kingdom

Introduction: Organ transplantation is a lifesaving treatment for end-stage kidney disease. The growing demand for transplants has increased utilisation of older donors with comorbid conditions. Transplants from these 'higher risk' donors have increased risk of graft failure or short and long-term suboptimal allograft function. As yet, the molecular processes underlying the donor biological networks that regulate kidney injury progression, with the potential for targeted interventions and pharmaceutical prevention, are unknown.

Methods: Kidney biopsies from 185 deceased donors, taken at the back table, were obtained from the QUOD biobank. Kidney biopsies were selected on the basis of paired donor kidney posttransplant outcomes on the continuum of allograft function defined by 12-month eGFR. Using state of the art data independent acquisition (DIA) mass spectrometry techniques, we profiled the proteome of pre-implantation biopsies from n=99 brain death donors (DBD) and n=85 circulatory death donors (DCD). Proteomic profiles were further analysed by bioinformatics to identify the most prevalent biological networks in donor kidneys associated with progression to allograft dysfunction posttransplant.

Results: Mass spectrometry and bioinformatics analysis resulted in the development of a proteomic library of 6,683 proteins that were quantitated across all samples. Proteomic profiles that associated with suboptimal allograft function (eGFR<39ml/min 12-month posttransplant) were significant different between DBD and DCD kidneys. The analysis found 448 proteins in DBDs and 221 proteins in DCDs that significantly discriminated donor kidneys with suboptimal (eGFR<39 ml/min/173mm^2) and good (eGFR>60ml/min/173mm^2) 12-month post-transplant function. Pathway analysis showed activation of cell death, autophagy and catabolic pathways in DBD contrasting with endothelia activation and metabolic dysregulation in DCD pre-implantation biopsies.

Discussion: Our data show that recondition of donor kidneys using pharmaceutical or mechanical prevention of donor kidney injury progression either during donor management or active perfusion should be specific for DBD and DCD donor types.

O53

2, 4-Dinitrophenol treatment during normothermic machine perfusion of steatotic human livers

Dr Samuel Tingle[1], Miss Emily Thompson[1], Miss Lucy Bates[1], Mr Ibrahim Ibrahim[1], Dr Victoria Shuttleworth[2], Mr Balaji Mahendran[1], Mr Rodrigo Figueiredo[1], Dr Jeremy Palmer[2], Dr Yvonne Bury[3], Prof Quentin Anstee[4], Mr Colin Wilson[1]

[1]Institute of Transplantation, Freeman Hospital, Newcastle, United Kingdom. [2]Institute of Cellular Medicine, Newcastle, United Kingdom. [3]Royal Victoria Infirmary, Newcastle, United Kingdom. [4]Freeman Hospital, Newcastle, United Kingdom

Introduction: Steatosis is the most common reason for decline of liver transplants worldwide. Reluctance to use these grafts stems for their sensitivity to ischaemia reperfusion injury. 2, 4-Dinitrophenol (DNP) increases metabolism and has been shown to reduce hepatic steatosis in vivo. Separate from these defatting effects, DNP abrogates ischaemia reperfusion injury. We aimed to assess the toxicity, pharmacokinetics and effects of 2, 4-DNP delivery during normothermic machine perfusion (NMP).

Methods: We performed 25 hours of NMP on human livers (n=6) which had been declined for transplant due to steatosis. Three livers in the DNP 15mg/kg group (2 DBD, cold ischaemic time=1092±396mins, liver weight=2.4±0.4kg) and three controls (2 DBD, cold ischaemic time=879±279, liver weight=2.7±0.2kg) were well matched; all P>0.1.

Results: Following delivery of DNP at 1 hour there were no toxic effects on flow parameters, lactate clearance, transaminase or lactate dehydrogenase release or histology (Figure 1). Pharmacokinetic studies revealed elimination with first order kinetics and a half-life of 7.7hrs (95% CI=5.1-15.9; Figure 2). As expected, DNP caused a significant increase in oxygen consumption compared to control livers (Figure 2; P=0.023). The increase in oxygen consumption was closely correlated with perfusate DNP concentration (r^2=0.975; P=0.002). Liver surface temperature was significantly higher in the DNP group, although remained within physiological limits in all livers. Oxidative stress measured by MDA level was numerically lower in the DNP group (P=0.193). The level of steatosis (macrovesicular or total) did not change over 25 hours of perfusion in either group.

Discussion: DNP can be safely delivered during NMP without toxicity, but is quickly eliminated by the liver. Oxygen consumption is successfully increased whilst perfusate DNP levels remain high. A DNP infusion, calculated using our pharmacokinetic data, should be investigated during prolonged NMP.

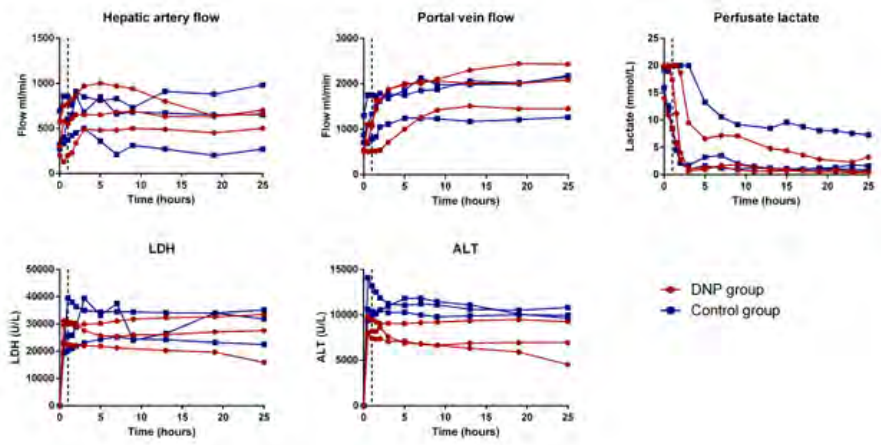


Figure 1 - Safety profile

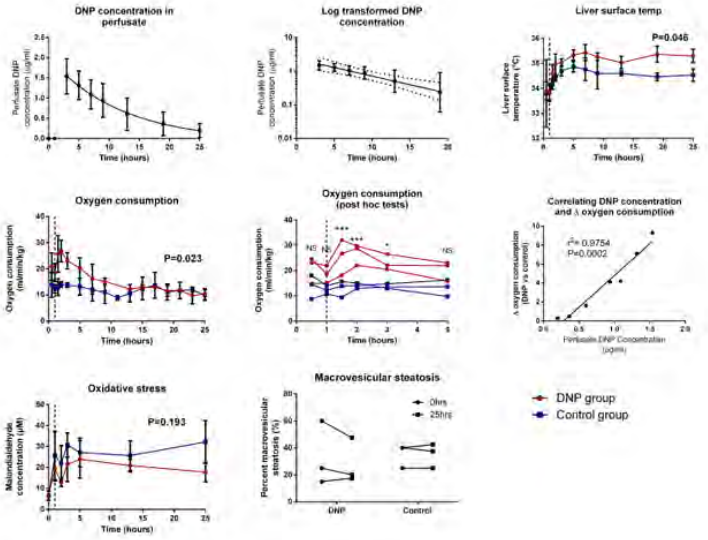


Figure 2 - Pharmacokinetics and pharmacodynamics

O54

Application of a quantitative scoring method for ultrastructural assessment of acute stress in pancreatic islets

Nicola Dyson[1], Nicole Kattner[1], Minna Honkanen-Scott[1], Bethany Hunter[1], Jennifer Doyle[1], Kathryn White[2], Tracey Davey[2], Rutger Ploeg[3], Yvonne Bury[1,4], Dina Tiniakos[1,5], James AM Shaw[1,6], William E Scott III[1]

[1]Translational and Clinical Research Institute, Newcastle University, Newcastle upon Tyne, United Kingdom. [2]Electron Microscopy Research Services, Newcastle University, Newcastle upon Tyne, United Kingdom. [3]Nuffield Department of Surgical Science, John Radcliffe Hospital, Oxford, United Kingdom. [4]Department of Cellular Pathology, Royal Victoria Infirmary, NUTH NHS Trust, Newcastle upon Tyne, United Kingdom. [5]Department of Pathology, Aretaieion Hospital, Medical School, National & Kapodistrian University of Athens, Athens, Greece. [6]Institute of Transplantation, Freeman Hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, United Kingdom

Introduction: Pancreas procurement, transport, and islet isolation procedures impact upon islet cells through acute stress; potentially affecting transplantation outcomes. Greater understanding of the subcellular changes in response to islet stress will enable development of interventions to improve survival and function of islet cells. Here, we demonstrate the Newcastle Pancreas Endocrine Stress Score (NPESS), a novel tool for ultrastructural characterisation of islet cells.

Methods: 30 donor pancreata, including 3 T1D and 3 T2D donors were interrogated. Tissue biopsies from head and tail regions of the organs were processed for transmission electron microscopy (TEM). Up to 25 endocrine cells were selected at random from each specimen for image capture and analysis. These images were used to develop NPESS, which uses a 4-point scale to classify organelle stress in 5 categories. Analyses of NPESS and the relationship with donor variables were then performed.

Results: Scores were highest (worst) for mitochondria (2.73±0.24) and lowest (best) for nuclei (0.79±0.52), with the widest range of scores seen in ER (1.47±0.67) (n=30). NPESS scores positively correlated with previously validated scores of the exocrine pancreas (r=0.32, p=0.04, n=41). Scores were associated with extended cold ischaemia in the head region (Figure 1). No differences were seen in head (8.33±1.36) versus tail (8.32±1.17), or in DBD (8.33±1.38) versus DCD (8.18±0.69) donors (Figure 2). When stratified by cell type, delta cells exhibited reduced scores relative to beta cells, and cells of heterogeneous endocrine type had the highest scores.

Discussion: We show that NPESS can be used to assess subcellular acute stress and identify varying effects upon organelles and in distinct endocrine cell types. The NPESS can be applied across multiple experimental models to improve understanding of both the impact of ischaemia upon islet cells, and how its effect can be minimised.

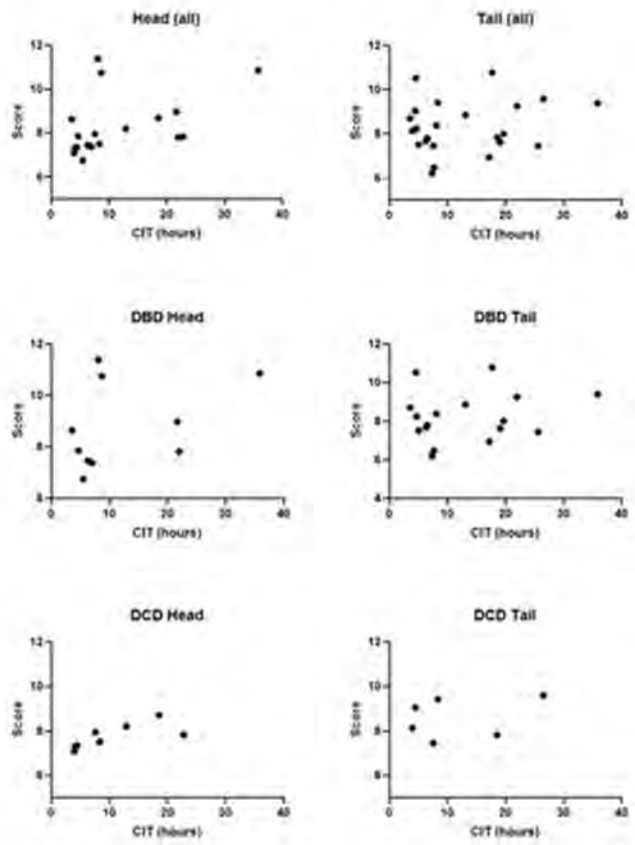


Figure 1. Correlations between total NPESS scores and CIT.
Total NPESS scores for each specimen are plotted against CIT of their respective organs. Scores correlated positively in the head of the pancreas (r=0.55, p=0.02), but no correlation was present in the tail (r=0.09, p=0.69). When stratified by donor type, the positive correlation in the head was lost for DBD donors (r=0.44, p=0.20) but persisted for DCD donors (r=0.81, p=0.02). There was no correlation in the tail for either DBD (r=0.05, p=0.84) or DCD (r=0.37, p=0.50) donors.

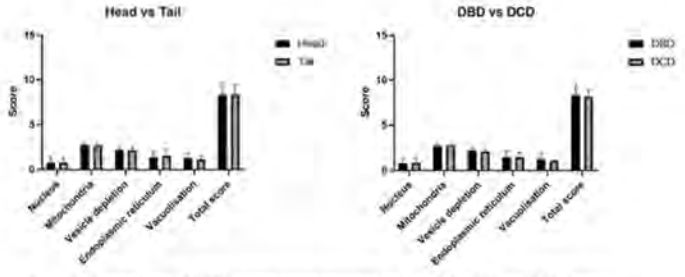


Figure 2. Comparisons of NPESS scores across pancreas regions and in DBD and DCD donors.
Bars indicate mean + SD. No significant differences were observed in individual organelle or in total scores between the head (n=18) and tail (n=23) of the pancreas, or between DBD (n=21) and DCD (n=9) donors.

O55

Analysis of renal transplant survival outcomes using the restricted mean survival time

Dr Yinghui Wei[1], Miss Lexy Sorrell[1], Dr Peter Rowe[2]

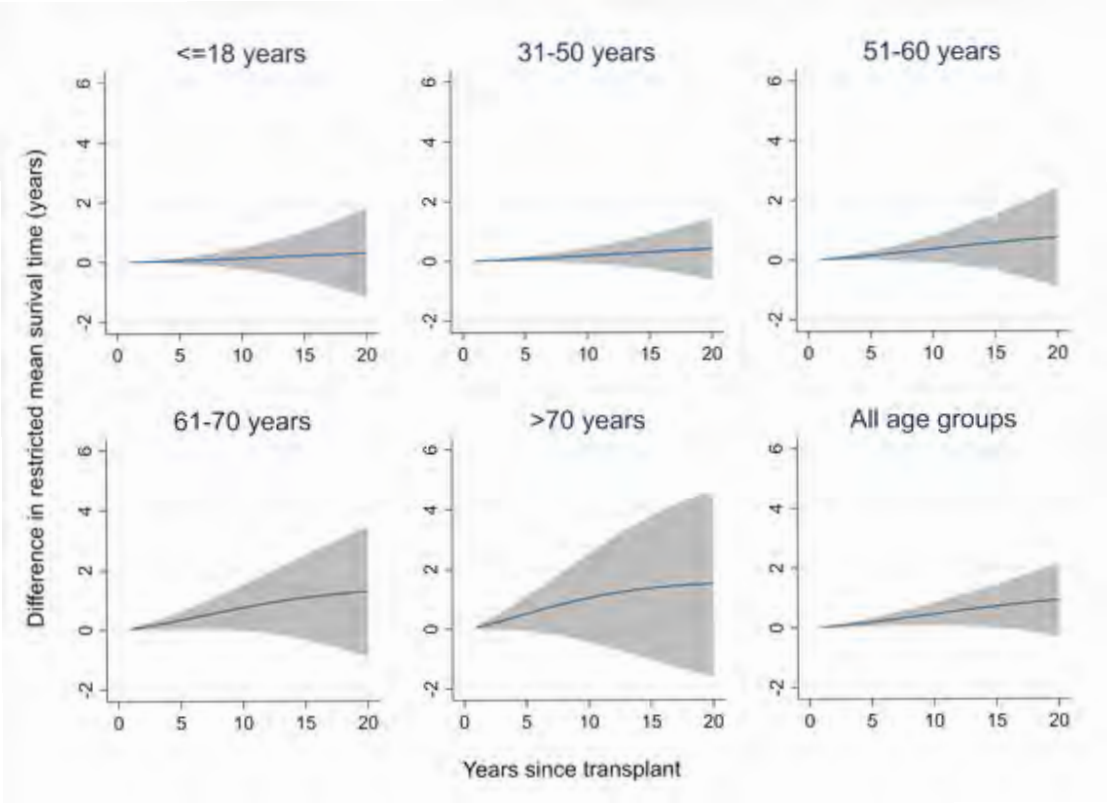
[1]University of Plymouth, Plymouth, United Kingdom. [2]South West Transplant Centre, Plymouth, United Kingdom

Introduction: Analysis on patients from a single transplant centre following renal transplantation is considered. The primary outcomes are all-cause mortality and graft failure. The restricted mean survival time (RMST) is introduced to estimate the difference in survival between recipient groups in the time scale.

Methods: Observational data of 1021 patients receiving kidney transplantation are analysed. We use multivariable flexible parametric survival models to estimate the hazard ratio and the difference in RMST. We include the covariates donor-type, recipient age, sex, diabetes, HLA mismatch (clinically favourable or non-favourable), years on waiting list and years on renal replacement therapy.

Results: Older recipient age and HLA non-favourable mismatch are associated with a higher risk of mortality. The difference in RMST at 14-years following transplant for HLA favourable mismatch recipients is 0.67, 95% CI: 0.02 to 1.31 years, compared with the non-favourable mismatch group. This difference indicates that the HLA favourable mismatch group's average life expectancy within the first 14 years following transplant is 8 months longer than those without a favourable match. Figure 1 shows the difference in RMST following transplant between the HLA favourable and non-favourable groups within age subgroups. No patient specific characteristics are found to be associated with graft failure.

Discussion: The identified factors associated with lower risk of mortality are HLA favourable mismatch and younger age (<50 years). The RMST analysis implies there is a small effect of HLA favourable mismatch with a gain in life expectancy about 8 months on average (95% CI: 0.2 to 16 months) within 14 years, compared to the non-favourable mismatch group. The RMST is easily interpretable as it provides the life expectancy up to a given time point following transplant. The visualisation of the difference in RMST over time gives clinicians and patients a simple figure to discuss when looking at transplant options.


<=18 years
31-50 years
51-60 years
61-70 years
>70 years
All age groups
Difference in restricted mean survival time (years)
-2
0
2
4
6
0
5
10
15
20
Years since transplant

O56

Use of donor specific antibody monitoring as an early biomarker of the impact of the new organ allocation scheme

Ms Eva Santos, Ms Nicola Gunby, Ms Thet Myint, Ms Arthi Anand, Dr Paul Martin, Dr Gaetano Lucisano, Dr Michelle Willicombe

Imperial College Healthcare NHS Trust, London, United Kingdom

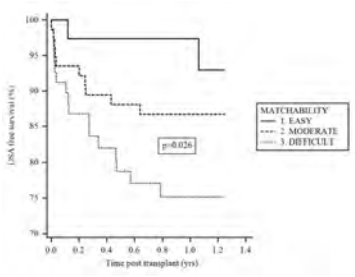
Introduction: The change in the UK organ allocation scheme was developed to achieve equitable access to transplantation, namely for highly HLA sensitised patients and patients with difficult to match HLA types. The impact on graft survival, if any, will not be apparent for several years. However, de novo DSA, may be utilised as an early surrogate biomarker for survival.

Methods: We analysed all deceased donor recipients who were transplanted between 09/2019-03/2020 (NEW) and compared them with patients transplanted in the same period the year prior (OLD). All patients were screened for DSA twice in the 1st week, at 1 month, 3 months and 1 year; and at times of allograft dysfunction. No patients with preformed DSA were included.

Results: The table shows a comparison of patient characteristics between the two schemes.

	NEW Scheme (n=121)	**OLD Scheme (n=64)**	P value
cRF >85%	28 (23.1%)	6(9.4%)	0.022
Difficult to match HLA type	62(51.2%)	7(10.9)	<0.0001
ABDR mismatch	4(3-4)	3(2-4)	0.002
Female Gender	46(38.0%)	16(25.0%)	0.075
BAME background	89(73.6%)	45(70.3%)	0.64
Wait time (months)	45(27-58)	28(19-48)	0.0078

There was no difference in DSA development or rejection, although there was a trend in higher DSA rate in the patients in the NEW scheme (p=0.16), who had shorter follow up. Patients with a difficult to match HLA type were more likely to develop DSA, p=0.03 (see figure). There was no difference in acute rejection rates.



Discussion: The new organ allocation scheme provides more equitable access to transplantation, however patients with uncommon HLA types are more likely to receive grafts with a greater HLA mismatch. These patients are at higher risk of de novo DSA development, which might translate to inferior allograft survival. These patients may benefit from tailored immunosuppressive regimens.

O57

HLA antibody profiles include clinically irrelevant denatured HLA (dHLA) reactivity – a strategy to identify and delist dHLA in highly sensitised patients

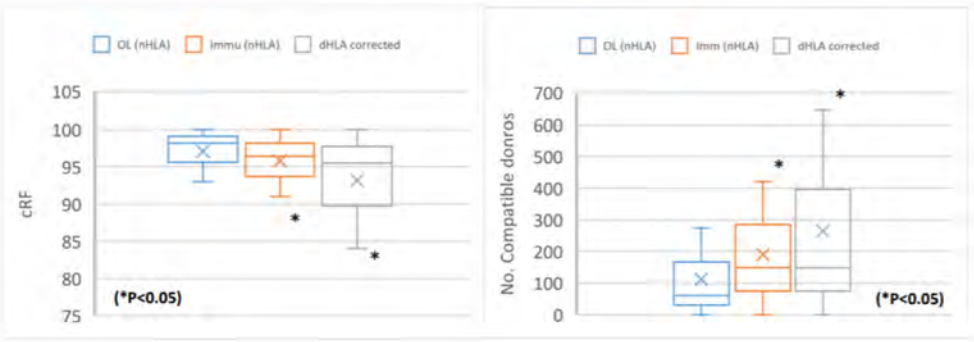
Dr Richard Battle[1], Dr Tineke Rennie[2], Dr Paul Phelan[2], Mrs Angela Abel[1], Mrs Sylvia McConnell[1], Dr David Turner[1]

[1]Scottish National Blood Transfusion Service, Edinburgh, United Kingdom.[2]Department of Renal Medicine, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom

Introduction: Highly sensitised patients (HSP) (cRF>85%) awaiting a deceased donor kidney offer are likely to wait longer than cRF<85% patients. Patients with 100% cRF have a significantly reduced donor pool. However, some of the reactivity in the assays used to detect HLA antibodies have been demonstrated to be towards clinically irrelevant misfolded HLA, termed denatured HLA (dHLA). We investigated dHLA in HSP, and determined the impact of dHLA upon cRF and predicted compatible donor numbers.

Methods: We identified 11 HSP who were sensitised by previous Tx, with no other sensitising events. Patients were tested for HLA class I antibodies using two commercially available Luminex SAB assays. The assays were performed as per manufacturers' protocols (native HLA, nHLA) and using a modified protocol to denature HLA (dHLA). HLA Matchmaker was used to identify donor mismatched HLA epitopes and HLA antibody profiles were analysed for the presence/absence of corresponding reactivity against these epitopes. dHLA and epitope data were aligned to identify dHLA reactivity.

Results: dHLA was detected in all patients. In total 130 reactions were deemed due to dHLA. Removing dHLA reactivity from listed unacceptables decreased cRF and increased the number of compatible donors, as shown below.



Discussion: Evidence suggests dHLA reactivity is not deleterious to renal Tx outcome. However, current strategies for HLA antibody testing are unable to distinguish between dHLA and nHLA reactivity. Use of a dHLA assay combined with knowledge of the patients sensitising events enabled identification of dHLA in a cohort of 11 HSP. dHLA significantly contributed to HSP cRF values and negatively impacted upon numbers of predicted compatible donors. Removal of unacceptables attributed to dHLA reactivity could increase opportunity of offers for HSPs.

P1

Angiotensin II Type-1 receptor (AT1R) antibodies are associated with inferior renal allograft survival

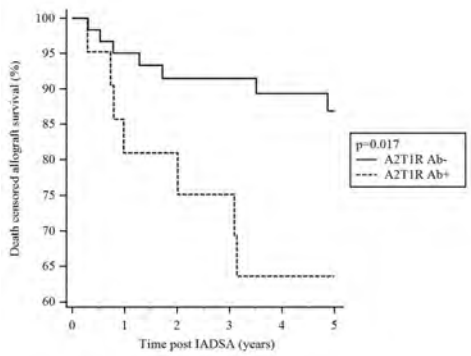
Dr Paul Martin[1], Ms Nicola Gunby[1], Ms Eva Santos[1], Dr Michelle Willicombe[1,2]

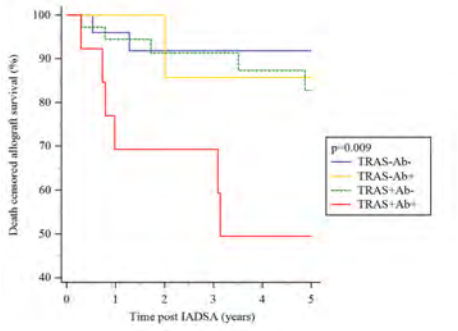
[1]Imperial College Healthcare NHS Trust, London, United Kingdom. [2]Imperial College, London, United Kingdom

Introduction: AT1R-antibodies have been implicated in antibody-mediated vascular rejection in the absence of detectable HLA DSA, in addition to cardiovascular diseases. Transplant renal artery stenosis (TRAS) or macrovascular disease has also been shown to be associated with rejection. We investigated the prevalence of AT1R antibodies and associated outcomes in patients with biopsy proven rejection who also underwent angiography for suspected TRAS.

Methods: 82 patients with no HLA DSA were identified and serum at the time of angiography was tested for AT1R-Abs using an enzyme-linked immunosorbent assay technique. A threshold of >17u/ml was considered a positive result. Prospectively collected outcomes up to 5 years were obtained from our unit's transplant registry.

Results: The prevalence of AT1R-Abs was high at 21/82 (26%). 49/82 (59.8%) of patients were found to have significant TRAS at the time of angiography, 13/49 (26.5%) of TRAS+ patients had Abs compared with 8/33 (24.2%) of TRAS- patients, p=0.82. There was no difference in gender, ethnicity, donor type, cause of ESKD, total HLA mismatch in the Ab+ versus Ab- groups. However, Ab+ patients were more likely to be younger than Ab- patients, 46.9±12.2 versus 54.4±12.0 respectively, p=0.017. AT1R-Ab+ patients at the time of angiography had an inferior 5-year allograft survival compared with Ab- patients, p=0.017 (figure 1). Outcome by TRAS and Ab status, showed that TRAS+Ab+ patients had significantly worse outcomes than either TRAS+Ab- and TRAS-Ab+ patients, p=0.009 (figure 2).





Discussion: In a highly selected patient population, we found a high prevalence of AT1R-Abs. Although we found no association with TRAS, further work is underway to compare the prevalence of AT1R-Abs in patients with normal transplant renal artery imaging. Importantly, we did find a negative association with allograft survival, which highlights the potential importance of AT1R-Abs in renal transplantation which warrants further investigation.

P2

Risk factors for clinically significant COVID-19 in a cohort of patients with failed renal allografts

Dr Paul Martin, Dr Michelle Willicombe, Dr Gaetano Lucisano

Imperial College Healthcare NHS Trust, London, United Kingdom

Introduction: Maintenance immunosuppression is well understood to protect against the development of HLA antibodies in patients with failed renal allografts. Patients on renal replacement therapy represent a group at high risk for COVID-19 related morbidity and mortality. It is not known if immunosuppression represents an added risk for COVID-19 infection, or if it affects the clinical course of the disease.

Methods: 174 patients with a failed renal allograft and established on haemo- or peritoneal dialysis had a nasopharyngeal swab for COVID-19 PCR testing after 13th March 2020; the date of the index COVID-19 case within the renal patient population in Imperial College Healthcare NHS Trust.

Results: 27/174 (15.5%) patients tested COVID-19 positive, with 13/27 (48%) of positive patients requiring hospital treatment. During the observation period, 8 patients died, 2 of whom tested PCR positive. 137/174 (78.7%) patients were from black, Asian or minority ethnic groups. Comparing white and BAME patients, there was no difference in the risk of acquiring COVID-19 (p=0.37) or requiring hospital treatment (p=0.94). Multivariable Cox-regression analysis highlighted diabetes (HR 2.809, 95%CI 1.226-6.438, p=0.015) and having more than one failed allograft (HR 2.934, 95%CI 1.210-7.111, p=0.017) as risk factors for infection. 150/174 patients were tested for COVID19 antibody. 35/150 (23%) tested positive. 15/35 (42.9%) had a previous negative COVID-19 PCR test. Binary logistic regression analysis revealed that only diabetes was associated with COVID19 infection defined as serological positivity, albeit non-significantly (OR 2.14, 95%CI 0.996-4.614, p=0.051)

Discussion: Maintenance immunosuppression is not associated with a higher risk of developing COVID19. In this group, diabetes and having more than one failed allograft are risk factors for COVID19 infection (defined as positive PCR test). Diabetes is a risk factor for COVID19 infection as defined by positive serology.

P3

Hybrid management of pseudoaneurysms in kidney and pancreas transplants requiring an allograft explant

Dr Harry VM Spiers[1,2], Miss Kerry Burke[3], Mr Hussein Khambalia[3], Mr Bence Forgacs[3], Mr Afshin Tavakoli[3], Dr Nirmal Kakani[3], Dr Dare Seriki[3], Mr David Van Dellen[3], Professor Titus Augustine[3,4]

[1]Addenbrooke's Hospital, Cambridge, United Kingdom. [2]University of Cambridge, Cambridge, United Kingdom. [3]Manchester Royal Infirmary, Manchester, United Kingdom. [4]University of Manchester, Manchester, United Kingdom

Introduction: Arterial pseudoaneurysms form a relatively small but serious complication following renal and pancreas transplantation. Although incidence remains low, potential rupture of the pseudoaneurysm is an imminent threat to both graft function and patient survival.

Methods: A retrospective analysis of cases of emergent transplant allograft explants was performed, where peri-operative percutaneous endovascular covered stent deployment was used to exclude the transplant artery pedicle, at a single UK transplant centre.

Results: The indication for stenting was both for prophylaxis and therapeutic management of pseudoaneurysms. Stent deployment prior to explant was performed in a total of 13 patients, (six kidney transplant and seven simultaneous pancreas kidney transplant). Stents were deployed for either management of ruptured pseudoaneurysm in 6 cases (2 kidney alone transplant, 4 simultaneous pancreas kidney transplant), or prevention of pseudoaneurysm formation or rupture in the remaining 9 cases. One patient experienced a post-operative vascular complication. There were no other procedure related post-operative complications including septicaemia or peripheral embolisation.

Discussion: Endovascular stenting can be safely used for both treatment and prophylaxis of kidney and pancreas transplant pseudoaneurysms. This emerging hybrid treatment option provides an adjunct to treatment for this complex group of patients.

P4

The Order of St John award: Sway presentation

Mrs Susan Hannah[1], Mrs Liz Waite[1], Miss Kayleigh Hirst[2], Mrs Anne Sorley[1]

[1]Organ Donation Services Team, NHS Blood & Transplant, Scotland, United Kingdom. [2]St John Scotland, Edinburgh, Scotland, United Kingdom

Introduction: The Order of St John United Kingdom Award for Organ and Tissue Donation recognises the exceptional gift of those who have saved or transformed the lives of others. In Scotland this year, the ceremony had to be cancelled due to coronavirus restrictions. Families would have to receive the awards by post, however we wanted to do something more. An online Sway presentation was created with recorded messages of thanks and pictures of the Scottish national memorial.

Case presentation: Families received a letter advising of this on line Sway presentation with personal messages from representatives of the Order of St John, NHS Blood and Transplant service, and from a recipient, with pictures of thank you messages. Recording video footage under lockdown restrictions was challenging and in the future more resource could achieve better results. An advantage to this format included the ability for families to watch it when they feel able to, and share it with others.

Outcome: An evaluation form was emailed to everyone who received the link to the online presentation. We used MS Forms to ensure that the questionnaire was concise and required minimum input from bereaved families. We asked: were they able to access the presentation without difficulty; what device they used; and did they feel it was important to have these personal messages available to them. Immediate response from families was very positive.

Discussion: The project demonstrated the value of partnership working between the Order of St John and NHSBT, to provide the best possible experience for families under the circumstances. It also provides a resource that can be used in future years for any families who are not able to attend ceremony in person. This new initiative has been shared for other teams in the UK to consider similar.

P5

Paediatrics - not “just little donors”. Recognising the unique considerations in paediatric donation by seconding an NHS paediatric nurse to work alongside the specialist nurse and clinical lead in organ donation to drive excellence within a busy paediatric critical care

Miss Raynie Thomson[1,2], Dr Rachael Barber[3], Mrs Laurence Frys[1,2], Miss Christina VonBarsewisch[3]

[1]North West Organ and Tissue Donation Team, Liverpool, United Kingdom. [2]Manchester University NHS Foundation Trust, Manchester, United Kingdom. [3]Royal Manchester Children’s Hospital, Manchester, United Kingdom

Case introduction: Royal Manchester Children’s Hospital (RMCH) Paediatric Critical Care (PCC) is one of five PCCs in the UK to audit >35 child deaths a year (NHSBT Potential Donor Audit 2019-2020). Over the last 4 years, the Clinical Lead (CLOD) and Specialist Nurse (SNOD) team have worked hard towards to embedding organ donation as a routine consideration during end-of-life planning. Audit data reveals improvements in referral rates and SNOD presence during the approach conversation from 50% in 2016, 75% in 2017 and achieving 100% in the last 3 financial years. As part of a large Level 1 trust with 6 critical care areas, RMCH has previously benefitted from 2 embedded SNODs. In 2020 allocation temporarily reduced to 1, creating a pull on embedded resource. Due to the impact of this, coupled with the predicted positive effect from the 2020 legislation change and the growing implication of COVID-19 on donation and transplantation, increasing the embedded resource was deemed critical in maintaining a focus on organ donation within the PCC.

Presentation: The needs of a paediatric unit differ to that of the adult population and consequently the embedded approach requires targeted development over time. Increasing evidence suggests the paediatric donation program is not as simple as ‘Taking Donation to 2020’. The UK ‘Paediatric and Neonatal Deceased Donation’ strategy acknowledges this and, following the 2018 review of the wide variance in paediatric practice, recommendations were made to embed excellence. In response, the RMCH donation team gained the support of PCC management and the Organ Donation Committee to second an experienced nurse into a non-clinical Lead Link Nurse (LLN) role for 50% of contracted hours. The vision being that recruiting an experienced PCC nurse would increase the resource and expertise required within the paediatric environment to support them in meeting the unique needs of the child as an organ donor.

Outcome:

Figure 1-Demonstrating key responsibilities of the LNN in response the paediatric strategy.

Discussion: Although in its infancy, we aim to demonstrate success of the role through delivering local improvements with a mission to secure funding for a permanent LNN post and to share the innovative and valuable opportunity with the wider critical care community.

Figure 1. **Paediatric and Neonatal Organ Donation Strategy Outcomes**	**Benefits of recruiting an experienced paediatric Lead Link Nurse (LNN) and key responsibilities outlined in the role specification.**
Outcome 1. Organ and Tissue Donation will be a routine part of end of life care on PCC	As an already experienced member of the PCC team the LNN will maximise local knowledge and build key relationships with the nursing, medical and organisational teams. Through maintaining a constant presence both clinically and educationally, the LLN will help to influence all end of life situations to ensure no opportunity is missed to offer organ or tissue donation.
Outcome 2. All PCCs will have support from NHSBT to achieve excellence	The unique nature of planning end of life care in children must be recognised and the LLN role will increase the allocation of support within the PCC for all involved. The LLN works in collaboration with the SNOD and CLOD and is trained to be a point of expertise to effectively bridge a gap between patients, their families and the NHSBT team in order to achieve excellence. The LNN will be line managed by the PCC Matron and the embedded SNOD with joint appraisals to allow for personal and professional development.
Outcome 3. Specific screening and assessment processes will be developed to ensure the safe and timely consideration of the potential for paediatric donation	The LLN will be responsible for ensuring visiting SNODs have access to the medical and social history needed to enable safe and comprehensive donor assessment. Through training and engaging PCC staff, potential donor optimisation bundles and collaborative management pathways can be achieved.
Outcome 4. Post donation care will be tailored to the specific needs of the family after the loss of a child	Bereavement care of the donor and their family continues to be shared between PCC staff and NHSBT. The local knowledge and presence of the LNN will ensure that more is done to integrate organ donation into standard PCC processes. Through improving the environment and maintaining professional relationships with all involved the gift of donation will be fully recognised. The post donation care of all hospital staff and SNODs involved can be further improved through joint debrief and inter-organisational support and wellbeing monitoring.
Outcome 5. Paediatric donation data and performance measures will be specifically focused to the needs of this patient group	Joint attendance of the SNOD, CLOD and LNN to Morbidity and Mortality meetings will ensure a holistic discussion around the donation potential and drive productive discussion around required referrals. Through continuing to collect and analyse the PDA, the SNOD can inform and collaborate with the LNN to plan strategic local improvements and initiatives.
Outcome 6. SNODs and all clinical staff likely to be involved in the treatment of potential child donors will have access to training and education tailored to address the unique considerations, challenges and opportunities of paediatric donation.	Through local knowledge, the LNN can assist the embedded SNOD to plan, deliver and evaluate training targeted to need within the paediatric community. As organ donation continues to move towards an embedded part of practice, maximising existing relationships with the paediatric workforce will enhance the opportunities to deliver debriefs, support and training to the wider MDT.

P6

Microvascular obstructions in portal bile duct capillaries and hepatic sinusoids during normothermic machine perfusion of marginal human livers

Dr Samuel Tingle[1], Miss Emily Thompson[1], Miss Lucy Bates[1], Mr Ibrahim Ibrahim[1], Mr Rodrigo Figueiredo[1], Dr Yvonne Bury[2], Mr Colin Wilson[1]

[1]Freeman Hospital, Newcastle, United Kingdom. [2]Royal Victoria Infirmary, Newcastle, United Kingdom

Introduction: Normothermic machine perfusion (NMP) is increasingly used for storage, reconditioning and viability testing of livers. Despite previous hopes, NMP has been shown to have no effect on ischaemic cholangiopathy in grafts from donors after circulatory death. It has recently been demonstrated that red blood cell (RBC) aggregates cause microvascular obstruction during renal NMP.

Methods: We analysed core biopsies taken during NMP of seven human livers which had been declined for transplant due to steatosis (2 DCD, 5 DBD; mean age 48yrs; mean CIT 15hrs 27mins). All livers received normothermic, pressure-guided perfusion. Perfusate was free of platelets and clotting factors.

Results: Figure 1 shows representative images from the seven livers. There were no RBC occlusions before NMP in any liver, however, every liver had accumulated RBC occlusions by one hour. This was true even for livers with cold ischaemic time less than 10 hours. MSB staining demonstrates that these occlusions are 'fibrin-rich' as they stain for both RBC (yellow) and fibrin (ogen) in red. These occlusions obstruct sinusoids, often around areas with a heavy burden of steatosis (Figure 1i). Critically, in the two DCD livers, RBC aggregates obstructed the portal tract capillaries which supply the cholangiocyte lined bile ducts (Figure 1ii).

Discussion: RBC aggregates, similar to those seen in the kidney, form during liver NMP in sinusoids and in the portal tract capillaries which supply ischaemia-sensitive bile ducts. Future research should investigate the use of agents to improve the microcirculation.

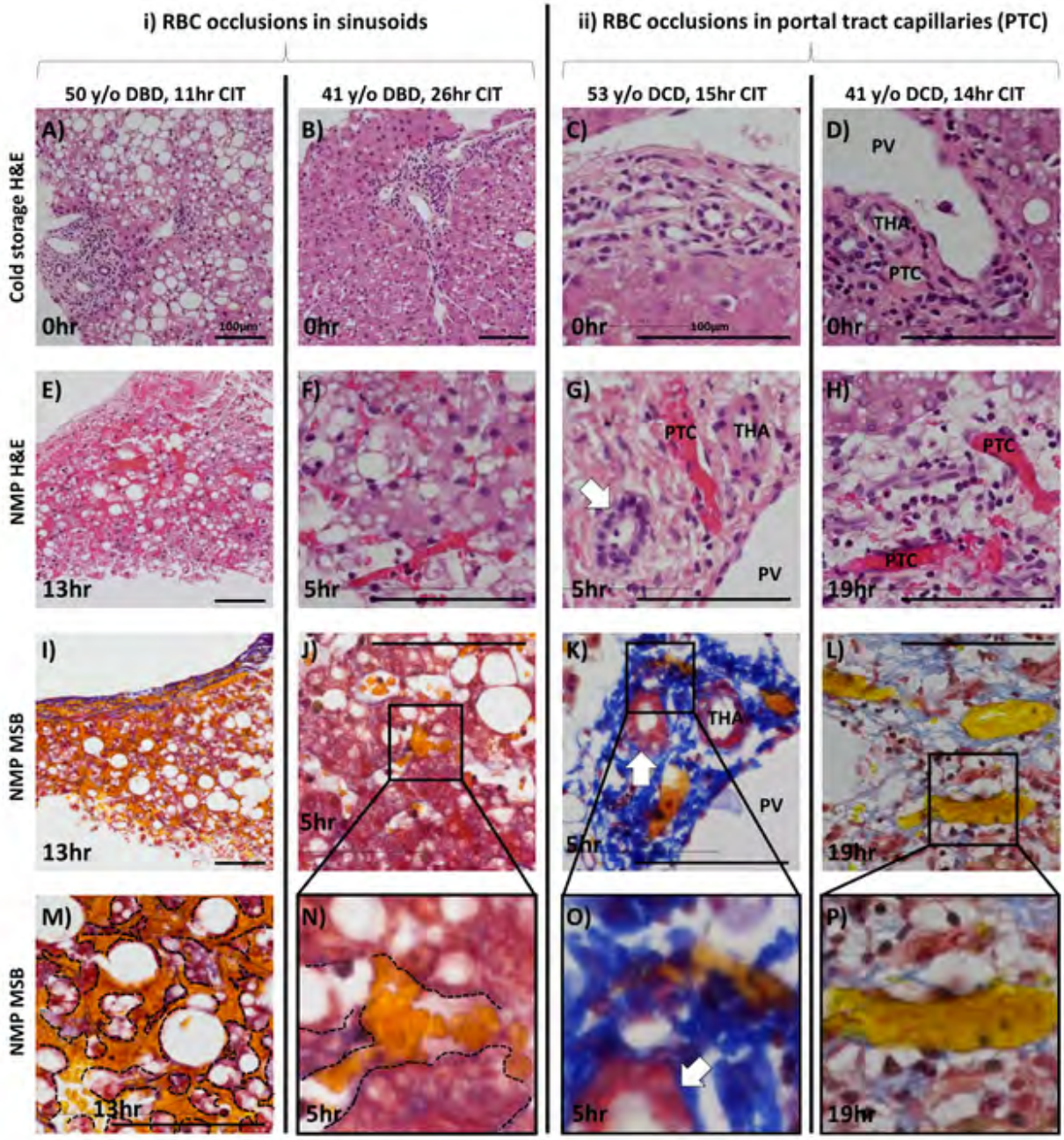


Figure 1; Fibrin (ogen)-rich red blood cell (RBC) aggregates causing microvascular occlusions during NMP. White arrows – bile ducts, Dashed lines - hepatic sinusoids, MSB - Martius Scarlet Blue, PV – portal vein, THA – terminal hepatic arteriole.

P7

Post-transplantation outcomes after deceased donor liver transplantation: an international comparison between the United States and the United Kingdom & Ireland.

Mr David Wallace[1,2], Dr Tommy Ivanics[3], Dr Thomas Cowling[2], Dr Kate Walker[4], Dr Neil Mehta[5], Dr Gonzalo Sapisochin[3], Professor Jan van der Meulen[2], Professor Nigel Heaton[1]

[1]Institute of Liver Studies, King's College Hospital NHS Foundation Trust, London, United Kingdom. [2]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom. [3]Multiorgan transplant program, University Health Network, University of Toronto, Toronto, Canada. [4]Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine, London, United Kingdom. [5]Division of Gastroenterology, Department of Medicine, University of California, San Francisco, USA

Introduction: In the last decade, there has been considerable global variation in how deceased donor livers are utilised. However, no recent international comparison of outcomes following the use of brainstem death (DBD) or circulatory death (DCD) donors has been conducted. We evaluated the risk-adjusted short and long-term mortality of DBD and DCD liver transplant (LT) recipients in the UK & Ireland (UK&I) with recipients in the US.

Methods: The UK Liver Transplant Registry and the United Network Organ Sharing Dataset were combined and used to identify all adults (aged ≥18 years) who underwent a first elective deceased donor LT in the UK&I and US between 2008 and 2016. Time-dependent Cox-regression methods were used to estimate hazard ratio's (HR) that compared deceased donor specific risk adjusted mortality in the first 90 days after transplantation and between 90 days and 5-years.

Results: 4950 LT recipients from the UK and 42874 from the US were included. In the UK&I, the use of DCD donor livers increased from 15.7% to 30.6%, and in the US from 5.3% to 6.9%. In DCD recipients, 5-year patient survival was 79.1% (95%CI; 75.6%-82.2%) in the UK and 72.6% (70.1%-75.0%, $p<0.001$) in the US and in DBD recipients 82.7% (81.1%-84.2%) and 75.8% (75.2%-76.3%, $p<0.001$), respectively. Following risk-adjustment, no difference in short-term mortality was identified for either DCD (comparing the UK&I and US, HR: 0.89, 95%CI: 0.62-1.27) or DBD (HR: 1.06, 0.92-1.22) recipients. However, longer-term mortality was found to be significantly better in the UK&I for those who did receive a DCD (HR: 0.71, 0.54-0.95) and DBD (HR: 0.73, 0.65-0.83) LT.

Discussion: Longer-term mortality following deceased donor LT is superior in the UK&I compared to the US. International comparisons for deceased donor LT practice may help identify modifiable factors that can increase organ utilization and improve post-LT outcomes.

Table 1: A time-dependent comparison of 5-year patient mortality and graft failure between the UK and US in those receiving a DCD liver.

	UK compared to US Hazard ratio (95% CI)			P value time dependency*[2]
PATIENT MORTALITY	**Overall 5-yr survival**	**0 to 3 months**	**3 to 60 months**	
Unadjusted analysis	0·71 (0·60-0·85)	0·83 (0·61-1·13)	0·66 (0·53-0·83)	0·25
Adjusted for recipient characteristics*[1]	0·87 (0·69-1·08)	1·01 (0·72-1·42)	0·81 (0·62-1·05)	0·24
Adjusted for recipient and donor characteristics*[2]	0·76 (0·59-0·98)	0·89 (0·62-1·27)	0·71 (0·54-0·95)	0·25
GRAFT FAILURE				
Unadjusted analysis	0.86 (0.80-0.92)	1.27 (1.02-1.59)	0.71 (0.59-0.87)	<0.001
Adjusted for recipient characteristics*[1]	1.08 (0.90-1.30)	1.53 (1.19-1.97)	0.86 (0.68-1.07)	<0.001
Adjusted for recipient and donor characteristics*[2]	0.91 (0.74-1.12)	1.29 (0.98-1.69)	0.73 (0.57-0.93)	<0.001

** Adjusted for recipient characteristics: sex, age, ethnicity, BMI (Kg/M^2), disease etiology, functional status, ascites, encephalopathy, HCV status, MELD, pre-transplant renal support, previous abdominal surgery and era of transplant [2008-2011 and 2012-2016).*

***Adjusted for recipient characteristics listed above and donor characteristics: sex, age, BMI (Kg/m^2), cit, cause of death, abomatch, graft type.*

Table 2: A time-dependent comparison of 5-year patient mortality and graft failure between the UK and US in those receiving a DBD liver.

	UK compared to US Hazard ratio (95% CI)			P value time dependency*[2]
PATIENT MORTALITY	**Overall 5-yr survival**	**0 to 3 months**	**3 to 60 months**	
Unadjusted analysis	0·68 (0.62-0.75)	0·83 (0.70-0.99)	0·64 (0·57-0·71)	0·01
Adjusted for recipient characteristics*[1]	0·88 (0.79-0.97)	1·08 (0.90-1.29)	0·82 (0·72-0·92)	0·008
Adjusted for recipient and donor characteristics*[2]	0·79 (0.77-0.88)	0·97 (0.81-1.16)	0·73 (0·65-0·83)	0·008
GRAFT FAILURE				
Unadjusted analysis	0.78 (0.72-0.84)	1.01 (0.88-1.16)	0.68 (0.62-0.76)	<0.001
Adjusted for recipient characteristics*[1]	0.94 (0.86-1.02)	1.22 (1.07-1.41)	0.82 (0.73-0.91)	<0.001
Adjusted for recipient and donor characteristics*[2]	0.81 (0.73-0.88)	1.06 (0.92-1.22)	0.70 (0.63-0.79)	<0.001

** Adjusted for recipient characteristics: sex, age, ethnicity, BMI (Kg/M^2), disease etiology, functional status, ascites, encephalopathy, HCV status, MELD, pre-transplant renal support, previous abdominal surgery and era of transplant (2008-2011 and 2012-2016).*

***Adjusted for recipient characteristics listed above and donor characteristics: sex, age, BMI (Kg/m^2), cit, cause of death, abomatch, graft type.*

Categories

Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P8

Predictive factors for hepatocellular carcinoma recurrence following liver transplant

Anisa Nutu[1], Angus Hann[1], Hanns Lembach Jahnsen[1], Dimitri Sneiders[2], Hassaan Bari[1], James Halle Smith[1], Hermien Hartog[1], Thamara Perera[1]

[1]The Liver Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom. [2]Dept of Surgery Erasmus Medical Center, Rotterdam, Netherlands

Introduction: Hepatocellular carcinoma is an established indication for liver transplant. Over the years various studies have aimed to identify those factors that can identify patients at high risk for recurrence after a liver transplant. There are no centers across the world with an established surveillance programme after the transplant. Identifying and unifying risk factors that can predict recurrence may help to monitor closely recipients at risk allowing for future pathways for surveillance.

Methods: We have performed a retrospective analysis in a single center where patients with an HCC listing diagnosis were transplanted during the period between January 2006 and April 2020. Variables related to recipient, tumor (at diagnosis, at listing and before transplant), donor and graft were analyzed to determine relation with HCC recurrence.

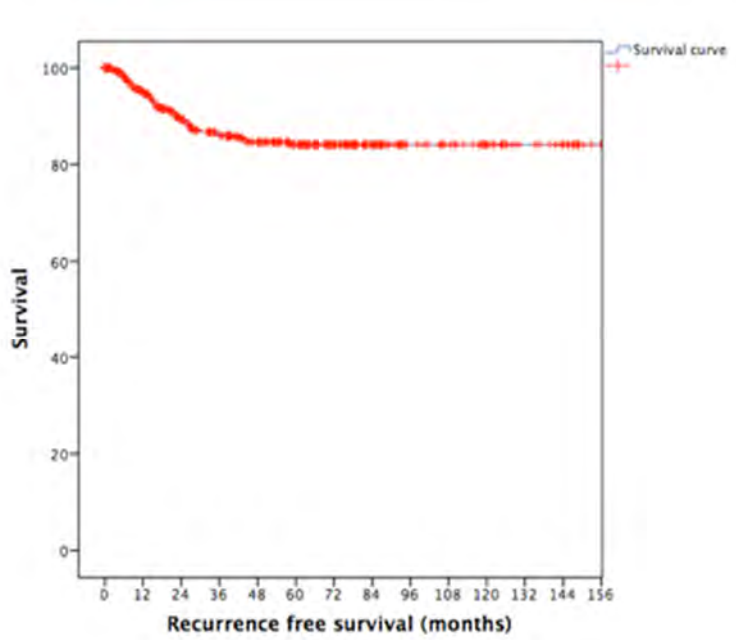
Results: There were 401 patients with HCC transplanted and no influence in the recurrence regarding the type of donor (52% were DBD, 48% DCD), the type of graft, the donor risk index (DRI), the WIT, CIT or transfusions during the transplant was seen. Recurrence free survival at 1, 3 and 5 years was 94%, 85% and 84% respectively (figure 1). At the explant, 30% of the tumours were beyond the Milan criteria. Performing bridging therapy, the number of locoregional treatments, presence of macro or microvascular invasion (mVi) and satellite nodules in the explant as well as an AFP>100 ng/ml the day of transplant had a significative association with recurrence after the transplant in the univariate analysis. In the Cox regression analysis, the variables that remained important in predicting HCC recurrence were bridging therapy, mVi, presence of satellite nodules and poorly differentiation (table1).

Discussion: Biological behaviour of the tumor (mVi, poorly differentiation in the explant), AFP or performing bridging therapy, rather than size, numbers of tumours at explant or type of graft used, remain the main factors to predict HCC recurrence.

Table 1. Cox regression analysis of risk factors for recurrence

	HR	**IC 95%**	**p**
Bridging therapy	3.739	1.976-7.076	***<0.001***
Microvascular invasion	2.454	1.108-5.437	***0.027***
Satellite nodules	2.857	1.632-5.994	***0.005***
Poorly differentiation	6.287	3.242-12.195	***<0.001***

Figure 1. Recurrence free survival Kaplan Meier curve



P9

Validation of an at-home testing kit for kidney transplant patients

Dr Stuart Deoraj[1], Dr Dimitrios Moutzouris[2], Dr Rachel Carling[2]

[1]Kings College Hospital, London, United Kingdom. [2]Guys and St. Thomas Hospital, London, United Kingdom

Introduction: The long-term follow-up of kidney transplant patients is required to identify graft dysfunction, aberrant immune-suppression, and complications of transplantation. To effectively decentralise post-transplant monitoring, we aimed to validate a Mitra Finger-prick sampling kit against serum laboratory tests for tacrolimus and creatinine samples

Methods: Over a period of 2 months, 64 tacrolimus samples and 101 creatinine samples were taken from individual patients using finger-prick analysis using a Mitra tip. The samples were taken from randomly selected patients, opportunistically at transplant clinic follow-up. Simultaneous samples were taken for formal laboratory testing. The results were compared using a Passing-Bablok analysis and Bland-Altman Testing.

Results: A Passing-Bablok analysis was performed on 64 tacrolimus samples. At a 95% Confidence Interval (CI) for a tacrolimus range from 1.8-27.1 micrograms/litre, no statistically significant constant or proportional errors were identified between laboratory and Mitra finger-prick tacrolimus levels. A mean bias of -0.07 micrograms/litre was identified using Bland-Altman analysis. A Passing-Bablok analysis was performed on 101 creatinine samples. It identified no significant proportional error between laboratory and Mitra samples at the 95% CI for a creatinine range of 37-864 micromole/litre. A significant constant bias was identified using capillary blood sampling but corrected on venous sampling using a Mitra tip. A "serum corrected" finger-prick result was generated.

Table 1: Passing Bablok Regression Results

Sample Tested	**Passing Bablok-Fit**	**Interpretation**
Tacrolimus Mitra Sample	Y= 0.025 + 1x	No proportional / constant bias
Creatinine Mitra Sample	Y= -3.641 + 0.8979x	Constant bias, no proportional bias
Venous creatinine sample using Mitra tip	Y=0.3102 + 0.974x	No proportional / constant bias

Discussion: The use of home testing kits is part of a paradigm shift towards pre-hospital and tele-medicine and helps to keep vulnerable patients out of hospital. We have demonstrated that finger-prick Mitra sample testing yields reliable and accurate results for creatinine and tacrolimus levels in transplant patients.

P10

Cardiac evaluation for patients being assessed for simultaneous pancreas and kidney (SPK) transplantation

Dr Elaine Jolly, Dr Michael O'Sullivan, Mrs Gail Defries, Mrs Sarah Cottee, Professor Christopher Watson

Cambridge University Hospitals NHS Trust, Cambridge, United Kingdom

Introduction: The optimal treatment strategy for patients with diabetes and renal failure is simultaneous pancreas and kidney (SPK) transplant. We sought to evaluate our current practice of cardiac assessment in patients being worked up for SPK, and of repeat cardiac testing while waiting for a transplant. All patients have either a dobutamine stress echocardiogram (DSE) or myocardial perfusion imaging (MPI) before listing, which is repeated after 12-18 months.

Methods: Records of all patients waiting >90 days for an SPK transplant between November 2014 and November 2019 were reviewed.

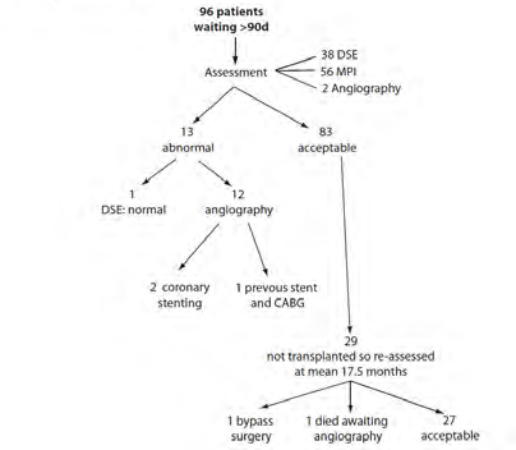
Results: 96 patients waited >90 days on the list during the study period. **Table 1** describes their details. 41% had a history of smoking and 12% had a history of prior significant vascular disease.

Table 1

Number of SPK patients	96
Proportion of male patients	66%
Dialysis mode	24% Pre-dialysis 39% Peritoneal dialysis 37% Haemodialysis
Positive smoking history	41%
Prior vascular disease (stroke, coronary or peripheral vascular disease)	12%
Waiting time in days (median, range) (n=90)	298 (91 – 1384)
Age at transplant in years (median, range) (n=90)	44 (24 – 63)

56 patients underwent MPI and 38 DSE prior to listing; 2 others had undergone prior coronary angiography. Thirteen patients (14%) had an initial abnormal stress test and underwent either coronary angiography (n=12) or DSE (n=1; initial equivocal MPI; DSE was normal). Of the 12 patients undergoing coronary angiography, three had significant disease. Two underwent stenting (including a never-smoking 28 year old); one who had previous bypass surgery and stenting was deemed acceptably revascularised and had no further intervention; he was the only patient to suffer a peri-operative myocardial infarction in the series. 29 patients underwent repeat MPI or DSE at a mean of 17.5 months after the initial stress test. Only 2 (7%) were abnormal; one underwent bypass surgery and had a successful transplant 11 months later; the other died awaiting angiography (see **Flow diagram**).

Flow diagram of cardiac investigations



Discussion: Cardiac evaluation by DSE or MPI at listing, with angiography +/- revascularisation for positive tests, was associated with a low event rate (only one peri-operative coronary event; 1%), whilst detecting asymptomatic patients with significant proximal coronary lesions.

P11

Outcomes of IL2 receptor antagonist induction therapy in standard-risk renal transplant recipients maintained on tacrolimus. A systematic review and meta-analysis of randomized and prospective studies

Dr Hatem Ali[1], Dr Mahmoud Mohamed[2], Dr Ajay Sharma[3], De Ahmed Halawa[3]

[1]University Hospitals of Coventry and Warwickshire, Coventry, United Kingdom. [2]University Hospitals of Tennessee, Tennessee, USA. [3]University of Liverpool, Liverpool, United Kingdom

Introduction: We planned the meta-analysis to evaluate the outcomes of using IL2-RA induction therapy in standard-risk renal transplant patients maintained on tacrolimus.

Methods: We performed a meta-analysis of prospective and randomized case-control studies comparing outcomes of IL2-RA induction therapy to no-induction among patients maintained on tacrolimus. Random effects model was used for analysis.

Results: 13 studies were included in our study. IL2RA induction therapy was not associated with significant differences in acute rejection rates in comparison to no induction therapy (CI: 0.77 to 1.22), graft survival (CI: 0.68 to 1.57) or patient survival (CI: 0.60 to 1.56). There was no difference between both groups in terms of delayed graft function (CI: 0.80 to 1.22), CMV infection (CI: 0.67 to 3.17) or malignancy (CI: 0.55 to 2.69). Three studies used steroid withdrawal protocol (maintained on tacrolimus and MMF) in the group of patients received IL2-RA induction therapy and compared it to triple immunotherapy. In these studies, there was no difference between both arms in terms of acute rejection rates (CI: 0.84 to 1.40), graft (CI:0.66 to 1.74) or patient survival (CI: 0.41 to 1.69).

Conclusion: IL2-RA induction therapy does not improve outcomes in patients maintained on tacrolimus-based immunotherapy in standard risk population. It is feasible to use IL2-RA induction therapy to aid in early steroid withdrawal.

P12

The role of gastroelectrical stimulation in the management of diabetic gastroparesis in patients with chronic renal disease

Mr Ryan Ghitta[1], Mr Stephan Dreyer[1], Mr Paul Glen[2], Miss Karen Stevenson[1]

[1]Renal Transplant Unit, Glasgow, United Kingdom. [2]Department of General Surgery, Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: Gastroparesis reflects end-organ damage from Diabetes Mellitus (DM) and results in symptomatic delay in gastric emptying without mechanical obstruction. This leads to nutritional deficiencies, weight loss and often debilitating vomiting. There remains concern over whether patients with renal failure and gastroparesis can successfully undergo transplantation due to concerns over tolerance and absorption of immunosuppression medication. We report a series of patients that were able to undergo transplantation following implantation of a gastric pacemaker.

Methods: A retrospective cohort study of patients with diabetic nephropathy and gastroparesis that underwent gastroelectrical stimulation (EGS) with a pacemaker were performed. Outcomes from EGS and management of renal disease was identified from patients' records.

Results: 24 patients with diabetic nephropathy underwent GES between 2013 – 2020. Of these 23 had Type 1 DM, 15 were female and median age was 35.8 years. During the study period, 11 started dialysis and 4 have an eGFR < 30. Of these, 5 are currently undergoing transplant assessment; 5 have been listed for transplantation of which 3 are currently listed (1 kidney only and 2 simultaneous kidney-pancreas (SPK)); 2 are suspended from transplant list. 4 Patients have undergone transplantation, 1 SPK and 3 kidney only transplants. All 4 transplanted maintained stable Tacrolimus levels post-transplant with no significant symptoms of gastroparesis.

Discussion: Gastroparesis is often associated with severe Diabetic end organ damage and affects a young, co-morbid population with a short window for successful transplantation. GES is effective and those transplanted have tolerated operative intervention and immunosuppression without deterioration in symptom control or nutritional status and with good transplant outcomes. Listing for SPK can be prolonged and suspensions are common. All transplants have been cadaveric in this cohort consideration should be given to pre-emptive living donor kidney transplantation discussions to minimise time spent on HD.

P13

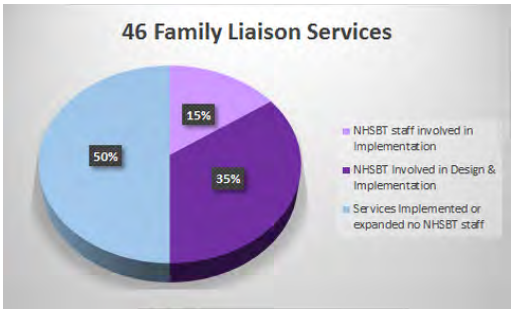
SN-OD support with ICU family communications during Covid-19

Ms Alison Galloway Turner[1], Ms Leanne Fare[2], Ms Nicola Newbound[3], Ms Helen Bentley[4], Ms Lisa Mackinnon[5], Ms Katherine Hurley[2], Ms Lisa Adair[4], Ms Vanessa Pritchard[3], Ms Samantha Bradshaw[6]

[1]NHS, Cambridge, United Kingdom. [2]NHS, Oxford, United Kingdom. [3]NHS, Bristol, United Kingdom. [4]NHS, Newcastle, United Kingdom. [5]NHS, Edinburgh, United Kingdom. [6]NHS, Birmingham, United Kingdom

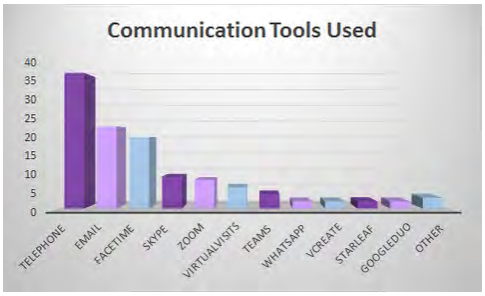
Introduction: During the first wave of the Covid-19 pandemic, Specialist Nurses-Organ Donation (SNOD) were redeployed to Intensive Care Units (ICU) across the NHS. ICUs found communication between relatives and clinical staff challenging, with increased workload, unit pressures and restrictions of PPE. Many units were able to utilise SNOD advanced communication skills to support ICUs in communicating with relatives.

Method: A questionnaire was disseminated nationwide and SNODs responded in relation to their local hospital. The questionnaire explored which ICU's had set-up or expanded a service to communicate with the patient's relatives during restricted visiting and detailed systems, resources and tools that had been utilised. 79 responses were received providing feedback on 64 trust/health boards; 46 had developed family liaison services.



Discussion: NHSBT Staff were involved in 50% of services, assisting setup of services in 70% of those cases. The majority involved ICU staff alongside other disciplines. Due to restrictions, it became apparent that a service was required to keep families informed. In many of the services the family liaison became a dedicated point of contact for relatives, setting expectations for regular patient updates. Family liaison services collaborated with the MDT gaining information for the regular patient update calls, as well as the clinician updates. Many services used telephone and email contact often in combination with other virtual video platforms. Families were encouraged to email in personal photos.

Identified popular platforms.



Where NHSBT staff were involved, it provided a broad service with supported EOL visiting, bereavement signposting and identifying safeguarding concerns.

Conclusion: NHSBT staff and the wider NHS demonstrated a huge amount of initiative and resilience, acting rapidly, using innovative techniques to ensure that families were supported. This questionnaire identified areas of excellence and combing these provides a 'toolbox' for forward planning a communication service for the future.

P14

Virtual family liaison service

Mrs Vanessa Pritchard, Mrs Nicola Newbound, Miss Sarah Crosby, Miss Michelle Powell

NHS Blood & Transplant, Cardiff, United Kingdom

Introduction: Specialist Nurses Organ Donation (SNOD) are able to delivery sensitive information to relatives regarding their loved ones within the ITU with the use of experienced advance communication skills. Traditionally this transfer of information would take place face to face, where SNOD's visualise nonverbal communication and identify any additional support required. However, the pandemic Covid-19 restricting this hospital visiting resulted in a breakdown of communication between the ITU multi-disciplinary team (MDT) and relatives.

Case presentation: The rapid implementing of a virtual family liaison service (VFLS) was identified to ensure families were communicated with daily. Specialist Nurses collaborated multiply ways of how information could to be gathered and delivered respecting the needs of the MDT and relatives. Information needed delivering sensitively, accurately and in confidence. It was agreed that direct telephone contact in a quite secured building would be most appropriate. A core group from multiple disciplines including SNODs, Practice Educators and General Practitioners ensured a variety of expert skills and allowed peer support in challenging scenarios, safeguarding and debriefing difficult conversations. Communications were documented alongside patient identifiable within a secured database for MDT accessibility and auditing purposes.

Outcomes: This VFLS received positive feedback from relatives and MDT. The VFLS reduced the MDT workload significantly as time spent contacting relatives was now diverted to being present on ITU. Efficient information gathering/ handover strategies within the MDT and core group allowed consistent and accurately information being relayed to relatives in a timely manner.

Discussion: This success of the VFLS has secured funding for the foreseeable future. Therefore, the core group of NHS Blood and Transplant Specialist Nurses has handed over this service to ITU colleagues. As the VFLS is new in its establishment feedback will continue to be gathered from follow up clinics and auditing for discussion.

P15

UK deceased donation and transplant activity in paediatrics for 2019 – 2020

Ms Chloe Brown[1], Ms Susan Madden[2], Ms Angie Scales[3], Dr Reinout Mildner[4,5]

[1]Statics Department NHSBT, Bristol, United Kingdom. [2]Statistics Department NHSBT, Bristol, United Kingdom. [3]NHSBT, London, United Kingdom. [4]NHSBT, Birmingham, United Kingdom. [5]PICU Birmingham Children's Hospital, Birmingham, United Kingdom

Introduction: We present data on organ donation and transplantation activity in children for 2019-2020, following the launch the national Strategic Plan for Paediatric and Neonatal Organ Donation in early 2019.

Methods: SN-ODs collect a standardised dataset on all UK Paediatric Intensive Care deaths monthly which was analysed by NHSBT Statistics department. Further data were extracted from the UK Transplant Registry.

Results: Of 1,125 paediatric deaths, 316 met referral criteria and 98% potential DBD and 83% potential DCD patients were referred to a SN-OD. Failure to identify potential DCD donors was the commonest reason for non-referral. Neurological testing rate was 74% with 65 eligible DBD patients. Of 180 eligible DCD patients, 112 were not approached with the general medical condition and Coroner/Procurator Fiscal refusal accounting for 60%. Consent/authorisation was ascertained for 68% and 46% eligible DBD and DCD donors, respectively, with 89% and 58% becoming actual donors. No families overruled their child's known wish to be an organ donor. The five-year neurological testing rate is static around 73% and SNOD presence for both DBD and DCD donation has improved. At year-end, the transplant list comprised 198 paediatric patients, an increase of 18 compared to 2018-19 with 11 more waiting for a kidney. In 2019-20, 230 paediatric patients received a transplant, 40 fewer compared with 2018/19, with 18 fewer kidney transplants.

Discussion: Paediatric referral rates are continuing to improve, especially for DBD. SNOD presence for both DBD and DCD is also at an all-time high. However, there are opportunities to improve DCD referral and neurological testing rates. Delivery workstreams forming part of the Strategic Plan implementation are aimed at improving these rates. Relatively few eligible DCD donors are approached and this should be explored further. The increase in the kidney transplant waiting list and fall in transplants warrant further investigation.

P16

Psychological morbidity across three kidney transplant patient groups: a single centre comparative study

Mr Arcan Altinar[1], Miss Rosie Heape[1], Miss Sharon Frame[2], Miss Linda Ross[2], Miss Hayley Wells[2], Ms Carleen Kerr[2], Ms Eilish Nugent[2], Dr Rohan Sundramoorthi[2], Prof John Weinman[1], Dr Joseph Chilcot[1], Dr Antonia Cronin[1,2]

[1]King's College, London, United Kingdom. [2]Guy's and St. Thomas' NHS Trust, London, United Kingdom

Introduction: Depression and anxiety in transplant patients are associated with increased mortality and co-morbidity. However, guidance on identifying those at risk is limited. We investigated psychological morbidity across three transplant patient groups (i) Long-term kidney transplant (LKT) >7 years post-transplant; (ii) 12-18 months post-transplant (PT); (iii) Failing grafts (GFR<20mL/min) attending Transplant Support Clinic (TSC).

Methods: Between 04/01/2019-11/03/2020 *N*=427 were screened using (i) Patient Health Questionnaire (PHQ9) and (ii) Generalised Anxiety Disorder (GAD7). Scores were transformed into binary variable. Scores >10 catalogued 'depression/anxiety'. Fisher's Exact Test, Pearson's Chi-Square analysis and logistic regression modelling were performed to determine significant proportion differences between groups and identify associations between group and psychological morbidity.

Results: *N*=357 completed questionnaires were analysed. *N*=247 LKT of which *N*=96(38.9%) were female (mean age 52.6 years). *N*=51 PT of which *N*=23(45.1%) were female (mean age 48.12 years). *N*=59 TSC of which *N*=32(54.2%) were female (mean age 49.19 years). Pearson's Chi-Square statistic was statistically significant. TSC had a greater proportion of depressive symptoms (33.9%) than PT (15.7%) and LKT (6.9%). LKT had the greatest proportion with no depressive symptoms (93.1%) (Table 1).

Table 1. Proportions across three groups based on PHQ-9 score. (*N*=357)

	Patient Groups		
PHQ-9 Score Categorisation	LKT(*n*=247)	PT(*n*=51)	TSC(*n*=59)
No Depressive Symptoms (scores ≤10)	230(93.1%)	43(84.3%)	39(66.1%)
Depressive Symptoms (scores >10)	17(6.9%)	8(15.7%)	20(33.9%)
Pearson Chi-Square statistical significance was $p \leq .001$			

Fisher's Exact Test revealed statistically non-significant differences between GAD7 categories across groups (Table 2).

Table 2. Proportions across three groups based on GAD-7 score. (*N*=357)			
	Patient Groups		
GAD-7 Score Categorisation	LKT (*n*=247)	PT (*n*=51)	TSC Patients (*n*=59)
No Anxiety Symptoms (scores ≤10)	232(93.9%)	48(94.1%)	51(86.4%)
Anxiety Symptoms (scores >10)	15(6.1%)	3(5.9%)	8(13.6%)
Fisher's Exact Test statistical significance was p =.137.			

In a logistic regression model controlling for age and gender, TSC patients had 6.2 times higher odds of having PHQ-9>10 (95% CI 3.0, 13.1, p<0.01) compared to LKT.

Discussion: We have identified statistically significant differences in psychological well-being between three transplant groups. In particular, TSC patients are at greater odds of having depressive symptoms. Further interrogation is needed to determine factors contributing to psychological wellbeing.

P17

Psychological morbidity among long-term kidney transplant recipients: a single centre study

Mr Arcan Altinar[1], Ms Rosie Heape[1], Ms Sharon Frame[2], Ms Eilish Nugent[2], Ms Catherine Lacey[2], Dr Rohan Sundramoorthi[2], Prof John Weinman[1], Dr Joesph Chilcot[1], Dr Antonia Cronin[1,2]

[1]King's College, London, United Kingdom. [2]Guy's and St. Thomas NHS Trust, London, United Kingdom

Introduction: An increased prevalence of depression and anxiety in transplant patients is associated with increased mortality and co-morbidity. Multiple factors have been associated, however, literature identifying those associated with long-term kidney transplant recipients (LKTR) is limited. We investigated psychological morbidity in a cohort of LKTR.

Methods: Between 04/01/2019-09/12/2019, *N*=275 LKTR were screened using Generalised Anxiety Disorder (GAD-7), Patient Health Questionnaire (PHQ-9), Medication Adherence Rating Scale (MARS), Work and Social Adjustment (WSA) Scale, and Brief Illness Perception Questionnaires. Demographic characteristics (age, gender, ethnicity), and Glomerular Filtration Rate (GFR) were catalogued. PHQ-9, GAD-7 and MARS scales were transformed into binary variables. PHQ-9 and GAD-7 scores ≤10 catalogued 'depressive symptoms'. MARS scale scores=30 catalogued 'adherent'. Univariate and logistic regression analyses were performed to investigate differences and determine odds ratios of variables associated with depression or anxiety.

Results: WSA was significantly associated with depression (*U*=316, *p*≤.001) and anxiety (*U*=412.5, *p*≤.001). GFR was associated with anxiety. The 'no anxiety' group had a higher GFR; *t*(218)=2.020, *p*=.045. The 'anxiety' group had a statistically significant greater proportion of female (11.1%, *p*=.017), and non-white patients (12.8%, *p*=.036).

Table 1.Univariate associations between demographic, clinical and psychometric responses. (*N*=220)

Psychological distress	Variable	X^2	*U*	*t*	*p*
Depression (Depressive *N*=205 VS Non-Depressive *N*=15)	Adherence (Adherent N=125 VS Non-adherent N=95)	0.080			.778
	Gender (Female N=81 VS Male N=139)	3.719			.054
	Ethnicity (White N=173 VS Non-white N=47)	[a]			.323
	Creatinine levels		1349.5		.429
	Work and Social Functioning scores		316		≤ .001
	Age			-.800	.424
	Estimated Glomerular Filtration Rates			.035	.972
Anxiety (Anxiety N=13 VS No Anxiety N=207)	Adherence (Adherent N=95 VS Non-adherent N=125)	.05			.824
	Gender (Female N=81 VS Male N=139)	[a]			.017
	Ethnicity (WhiteN=173 VS Non-whiteN=47)	[a]			.036
	Creatinine levels		1129		.331
	Work and Social Functioning scores		412.5		≤.001
	Age			-.021	.984
	Estimated Glomerular Filtration Rates			2.020	.045

Note. [a] Fisher's Exact Test

In a logistic regression model adjusting for the other variables, higher work and social difficulties were significantly associated with depression (*OR*=1.194) (95% CI 1.106-1.290, $p \leq .001$) and anxiety (*OR*=1.141) (95% CI 1.065-1.222, $p \leq .001$).

Discussion: WSA and GFR are predictive of psychological morbidity in LKTR. Anxiety was greater in females and non-white patients. Further understanding regarding these relationships is needed to improve support for LKTR.

P18

The positive impact of transition of the conventional kidney donors' annual follow-up clinics to the remote nurse-led clinic during the Covid-19 pandemic- a patient surveillance results

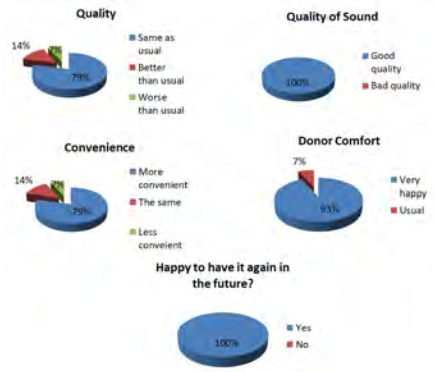
Caroline Basarab-Horwath[1], Debbie Butlin[1], Veronica Lennon[1], Lisa Hamilton[1], Kevin Firth[1], Ceris Harrison[2], Dr William McKane[1], Mr. Ravi Pararajasingam[1], Mr. Yazin Marie[1]

[1]Sheffield Kidney Institute, Sheffield, United Kingdom. [2], Sheffield Kidney Institute, United Kingdom

Introduction: The minimum standard of follow up of kidney donors, after the initial first appointment, set by the British Transplant Society is a yearly review. The Covid-19 pandemic has disrupted clinic appointments in every field of medicine including transplantation. In order to maintain a high standard of care of kidney donors in our centre following donation, we started a nurse- led remote clinic without compromising quality. We involved the donors in a survey to assess this service.

Methods: Our team formulated a clear standard operating procedure (SOP) for the remote nurse- led clinics. A drive-through phlebotomy service was utilized in a way that the donors would have their blood tests done before they receive the telephone consultation. We then conducted a feedback from our donors.

Results: Out of 40 surveys, we received 72.5% responses back. These showed that the donors were extremely happy in all aspects approaching 100% satisfaction in some areas e.g. going through a telephone consultation for the next appointment.



Discussion: In order to maintain our higher-than-UK average rate for donor follow up throughout the COVID-19 pandemic, we successfully managed to rapidly change the practice to telephone clinics. Our donors found the new service more convenient, needing less time off work and without travelling. The availability of blood test results prior to the consultation was seen very handy to avoid further waiting time and potentially additional appointments. The biggest achievement was that all the donors were contacted and satisfied as well as the living donor team. We are further improving this service by sending blood pressure machines to donors who are unable to afford one and utilising different venues for blood testing for more convenience.

P19

Development of *ex vivo* normothermic perfusion as an innovative method to assess pancreases after preservation

Miss Ann Ogbemudia[1,2], Miss Gabriella Hakim[1], Mr Fungai Dengu[1,2], Mr Faysal El-Gilani[1,2], Dr John Mulvey[1], Miss Kaithlyn Rozenberg[1], Dr Thomas Prudhomme[3,4], Dr Fenna Van de Leemkolk[1], Dr Letizia Lo Faro[1], Mr Joshua Oliver[5], Mr James Hunter[1], Professor Paul Johnson[6], Professor Peter Friend[1,2], Professor Rutger Ploeg[1,2], Dr Julien Branchereau[3,4,1]

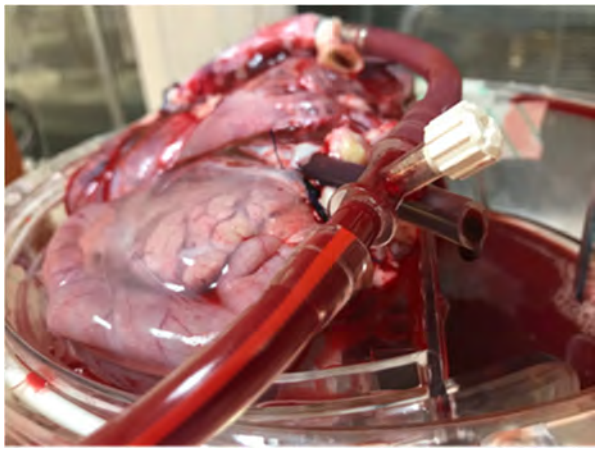
[1]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, United Kingdom. [2]Oxford Transplant Centre, Oxford, United Kingdom. [3]University De Nantes, Centre de Recherche en Transplantation et immunologie, Nantes, France. [4]Institut de Transplantation Urologie Nephrologie, Nantes, France. [5]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom. [6]University of Oxford, Oxford, United Kingdom

Introduction: Static cold storage (SCS) is the standard method for pancreas preservation but does not facilitate objective organ assessment prior to transplantation. Normothermic machine perfusion (NMP) has been used to test other abdominal and thoracic organs' function and viability in transplantation settings. Our aim was to develop a NMP protocol specific for pancreases and then investigate its potential as an organ assessment strategy.

Method: 8 porcine pancreases were procured in conditions replicating donation after circulatory death with warm ischaemia time of 25 minutes. After 3 hours of static cold storage (SCS) the pancreases were divided into 3 experimental groups 1) the feasibility group (n=2) that underwent 2.5 hours of NMP 2) the SCS group (n = 2) that underwent an additional 6 hours of SCS prior to assessment on NMP for an hour and 3) the Oxygenated Hypothermic Machine Perfusion (oxyHMP) group (n = 4) that underwent 6 hours of oxyHMP followed by 1-hour assessment on NMP. The NMP protocol used autologous, leucodepleted blood delivered at a mean arterial pressure of 40mmHg with a temperature of 37^{o}C. At timed intervals during NMP, perfusate samples were collected for gas analysis and perfusion parameters were recorded.

Results: The feasibility group was used to develop the NMP protocol and demonstrated stable perfusion parameters throughout NMP. Compared to the SCS group the oxyHMP group demonstrated better average perfusion characteristics with lower resistances, higher flow rates, lower mean lactate levels and physiological pH. The oxyHMP group maintained normal macroscopic appearances during NMP. At the end of NMP the SCS group had an average 32% weight increase compared to the oxyHMP group that were found to have a 17% weight reduction.

Discussion: Normothermic machine perfusion of whole pancreases is feasible after cold preservation and potentially useful as an assessment strategy. Furthermore, it demonstrated that oxygenated HMP may be beneficial for pancreas preservation compared to SCS.



P20

Ward staff education package for nurses during COVID pandemic due to redeployment of staff at a UK cardiothoracic transplant centre

Miss Emily Gilchrist, Ms Sadie Von-Joel, Miss Amy Walton, Miss Monika Krupa, Mr Richard Quigley, Mrs Lisa Steadman, Ms Gillian Wright

Royal Papworth Hospital, Cambridge, United Kingdom

Objective: Transplantation is the gold-standard treatment for end-stage organ failure. The ultimate objective is improving quality of life and if possible give prognostic benefit when individuals' clinical condition has not previously responded to either medical, or on occasion, surgical interventions. Despite being a transplant centre specialising in heart and lung transplantation, there is no dedicated transplant ward. Patients under the transplant team are nursed by the wards' surgical nurses but heavily supported by the transplant specialist nursing team. Nursing redeployment during the COVID-19 outbreak identified educational gaps in continuity of care. Experienced ward nurses and transplant specialist nurses were deployed to other areas, leaving inexperienced and newly qualified nurses transplant patients with limited cover by the specialist team.

Methods: Caring for transplant recipients involves a highly specialised knowledge and skillset. Attaining knowledge raises awareness of personal and professional accountability and highlights areas for further development. Due to the pandemic, risk assessments identified that baseline nursing input would be decreased. This guide is aimed at ward based nurses to gain knowledge and confidence to integrate into their practice framework for pre- and post-transplant patient care. Members of the Transplant Specialist Nursing Team wrote a step-by-step guide which displayed in-depth information to support our ward colleagues.

Result: Disseminating this guide throughout the trust should improve patient outcomes and experiences, cause fewer medication errors and increase nurse competence. It will also raise awareness into the role of the Transplant team and how all individuals contribute to a patient's journey.

Discussion: The production of this document has empowered the Transplant Specialist Nursing team at a UK Cardiothoracic Transplant Centre whilst simultaneously creating a support mechanism and reference point for our surgical nurses.

Table 1 – Example of contents page

Contents

P21

Donor-transmitted melanoma - need for revision of SABTO guidelines?

Dr Christopher Seet, Prof Catherine Harwood, Dr Raj Thuraisingham, Dr Andrea Cove-Smith, Prof Muhammad Magdi Yaqoob, Mr Vassilis Anastassiou, Mr Muhammad Arslan Khurram, Mr Ismail Mohamed

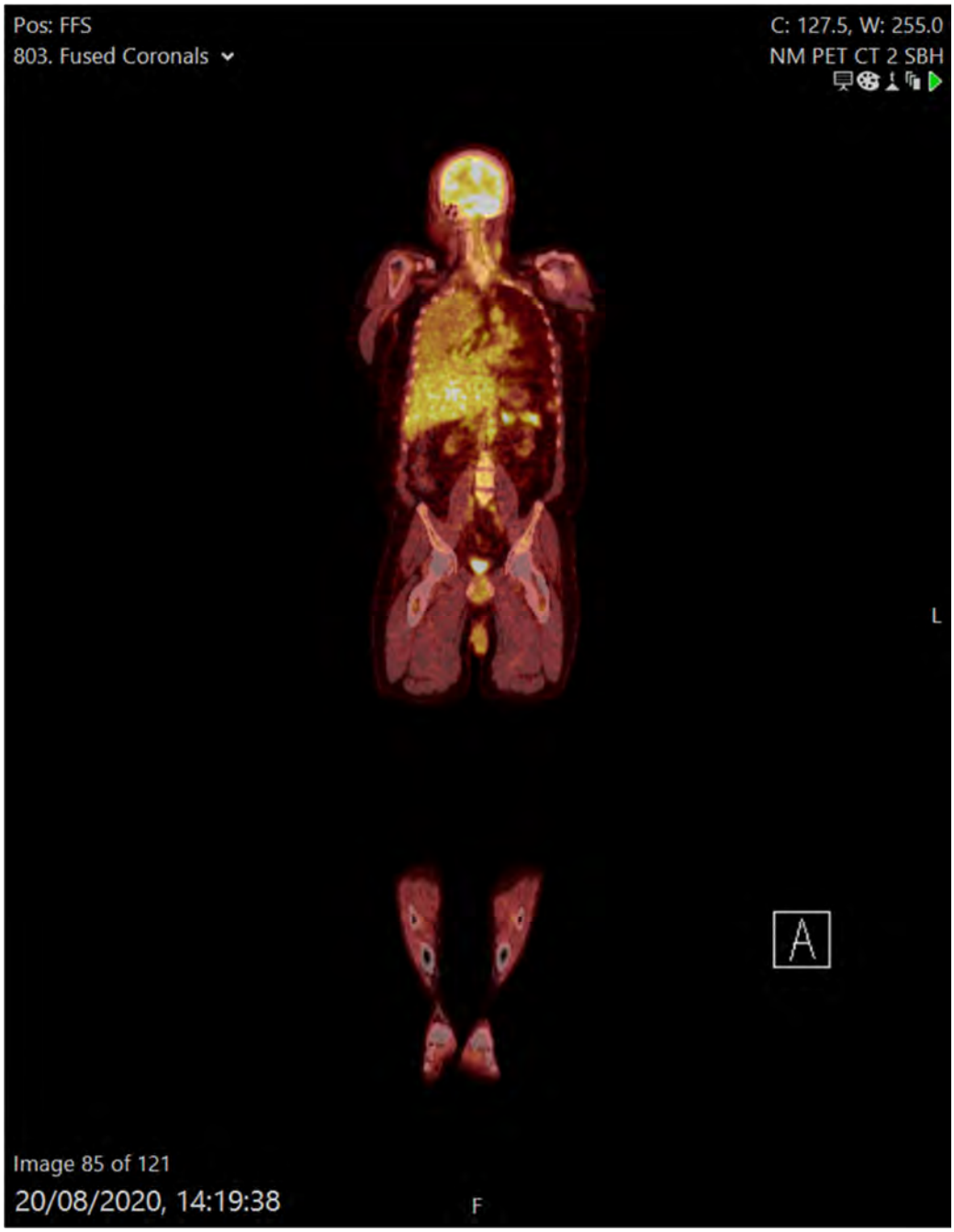
Bart's Health, NHS trust, London, United Kingdom

Introduction: Donor-derived melanoma has previously been described in solid organ transplant recipients. SABTO guidelines consider some cancers, including superficial spreading melanomas, to have low risk of transmission. We describe a case of donor-transmitted superficial spreading melanoma which resulted in the recipient's death.

Case presentation: A 50 year old male received a kidney from a 57 year old donor with a history of superficial spreading melanoma (Breslow thickness <1.2mm, fully excised 8 years prior, and discharged after 5-year cancer free follow up) who died from an intracerebral haemorrhage. Based on SABTO guidelines this falls under "low risk of cancer transmission" (0.1-2%). Two recipients at another centre received the contralateral kidney and islet cells. 8-months post-transplant, the islet cell recipient was diagnosed with donor-derived melanoma. Our patient was still asymptomatic and management including imaging, immunosuppression withdrawal and graft explant was planned. He was admitted two weeks later with a malignant pleural effusion. He was unfit for a surgical nephrectomy, hence an IR embolisation of the kidney was performed. A CT-PET showed FDG uptake in the lungs, liver, left adrenal, and pancreas. Immunotherapy to treat the melanoma was considered, but he was unfit for this and died 1-month later.

Outcome: All three recipients from this donor died of donor-derived melanoma.

Discussion: Donor-transmitted melanoma is a rare complication of organ transplantation. Current SABTO guidelines consider superficial spreading melanoma with <1.5mm thickness, curative surgery, and >5-year cancer free follow up, as in this case, has a low risk of transmission. However, in the absence of more detailed information on staging the current criteria potentially include donors with melanomas ranging from stage IA to IIIB, and corresponding 10-year melanoma survival probabilities between 98-77%. We suggest SABTO guidelines should be revised to more accurately risk stratify donors with a history of melanoma.



FDG CT-PET: Uptake in the lungs, liver, and left adrenal

P22

The implications of donor-recipient size mismatch in renal transplantation

Mr Ioannis D. Kostakis[1,2], Mr Nikolaos Karydis[1], Dr Theodoros Kassimatis[1], Mr Nicos Kessaris[1], Mr Ioannis Loukopoulos[1]

[1]Department of Transplantation, Guy's Hospital, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [2]Department of HPB Surgery and Liver Transplantation, Royal Free Hospital, Royal Free London NHS Foundation Trust, London, United Kingdom

Introduction: Transplanting kidneys small for the recipient's size results in inferior renal graft function. Body surface area (BSA) is related to kidney size. We used the BSA index (BSAi) (Donor BSA/Recipient BSA) to assess whether the renal parenchymal mass provided by the donor is sufficient for the recipient.

Methods: We included 26223 adult single kidney-only transplants (01/01/2007-31/12/2019) from the UK Transplant Registry. We divided renal transplants in groups: BSAi≤0.75, 0.75<BSA≤1, 1<BSAi≤1.25, BSAi>1.25. We compared delayed graft function (DGF) rates, primary non-function (PNF) rates and graft survival among them in the entire cohort and for each donor type separately [living, donation after brain death (DBD), donation after circulatory death (DCD)] (reference category: BSAi≤0.75).

Results: Cases with BSAi≤0.75 had the highest DGF rates in living-donor renal transplants (11.1%) (0.75<BSAi≤1è OR=0.591, 95%CI: 0.318-1.097, p=0.095, 1<BSAi≤1.25è OR=0.456, 95%CI: 0.232-0.894, p=0.022, BSAi>1.25è OR=0.318, 95%CI: 0.132-0.766, p=0.011) and DBD renal transplants (26.2%) (0.75<BSAi≤1è OR=0.723, 95%CI: 0.546-0.957, p=0.024, 1<BSAi≤1.25è OR=0.621, 95%CI: 0.465-0.83, p=0.001, BSAi>1.25è OR=0.65, 95%CI: 0.468-0.903, p=0.01). There were no significant differences in DCD renal transplants regarding DGF rates (just above 40% in all groups). No significant differences were found concerning PNF. Graft survival was similar among BSAi groups in living-donor and DBD renal transplants. DCD renal transplants with BSAi≤0.75 had shorter graft survival than the other groups (0.75<BSAi≤1è HR=0.548, 95%CI: 0.408-0.736, p<0.001, 1<BSAi≤1.25è HR=0.48, 95%CI: 0.352-0.655, p<0.001, BSAi>1.25è HR=0.45, 95%CI: 0.307-0.66, p<0.001). 5-year and 10-year graft survival rates were 73% and 58%, respectively, for DCD renal transplants with BSAi≤0.75.

Conclusions: DGF risk is higher in living-donor and DBD renal transplants with BSAi≤0.75. Graft survival is greatly reduced in DCD renal transplants with BSAi≤0.75.

P23

A single centre experience of conversion to extended release Envarsus® from other tacrolimus formulations (OTF) to improve patient outcomes

Ms Charlotte Mallindine, Ms Ananda Manoj, Dr Sarah Fluck, Dr Gayathri Rajakaruna

Department of Renal Medicine, Lister Hospital, Stevenage, United Kingdom

Introduction: Tacrolimus has been the mainstay of maintenance immunosuppression(IS) for kidney transplant recipients. Envarsus® is once-daily, extended-release formulation with improved bioavailability, therefore requires a lower daily dose to achieve therapeutic levels. With Cmax~17% lower than for OTF and lower variation in levels, it may be beneficial for patients with adverse events due to high peak levels. Our aim was to study the outcome of conversion to Envarsus® in these patients.

Methods: We retrospectively identified patients based on three main indications stated below for conversion to Envarsus® and followed them up prospectively. So far 18 transplant patients have been converted. The reasons for the switch, reduction in adverse events and costs have been investigated.

Results: 9 patients were converted to Envarsus® due to high tacrolimus dose (³10mg/day). Dose conversions were based on 1:0.7 on manufacturers' recommendation. Patients were reviewed after an average of 18months (range 4-18months). 7 required further dose reductions, (average 18% dose decrease), 1 a dose increase and 1 remained on the same dose. For this group cost savings were £1850per annum. Tremor affects patients with high peak tacrolimus levels, with evidence that switching to Envarsus® decreases hand tremor. 2 patients affected were switched to Envarsus®. After 18months neither patient's tremor was significantly improved despite dose minimisation. 7 patients were converted to Envarsus® following diagnosis of BK viraemia. 3 of these had biopsy proven BK nephropathy. 5 patients had MMF withdrawn completely and 2 patients had MMF minimised to lowest dose at diagnosis. Following conversion 3 patients cleared the viraemia completely (range 3-15months). 2 patients are showing continued reduction in viral load (range 5-8 months). 2 patients have fluctuating viral loads despite conversion to Envarsus®. There was no cost saving for this patient cohort as they converted from generic tacrolimus formulations. None of the 18 patients developed acute rejection following conversion.

Conclusions: Conversion from OTF to Envarsus® has shown benefit in dose reduction and cost saving for patients requiring large doses of IS. Although patient cohort is small there has been beneficial effect on sustained viral clearance and trend towards this on patients with BK viraemia. These outcomes may benefit long-term graft outcomes in these subsets of patients with adverse effects due to high peak levels.

P24

Rare transplant of a DCD heart from an adult donor to a paediatric recipient

Miss Clare Croxall

NHS Blood & Transplant, Sheffield, United Kingdom

Introduction: A DCD heart from a lady in her early 40's was transplanted into a paediatric recipient, a new experience for the specialist nurses (SNOD) involved in the donation.

Case presentation: During routine DCD heart offering processes it became apparent that due to donor size, centres were struggling to find an appropriately size matched recipient. Cardiac function was good, and it was clear that death would be imminent after extubation. The final DCD heart transplantation centre on the matching run suggested speaking to one of the paediatric cardiothoracic transplanting centres. The SNOD was unaware there were any paediatric recipients consented for DCD hearts at this time. The paediatric cardiothoracic co-ordinator confirmed that they had a suitable paediatric recipient and would be prepared to accept the organ for transplantation.

Outcome: The request to deviate from the DCD heart matching run to include the paediatric centre was escalated from the operational manager to the Cardio-thoracic (CT) Advisory Group and an agreement to proceed confirmed and an appropriate CT retrieval team was allocated. This process did cause a significant time delay but this was fully supported by the donor family. The heart was successfully retrieved and transplanted into a young lady who is known to be doing well post-transplant, she has written to the family of the donor to express her deepest sympathy and appreciation.

Discussion: This heart would not have been transplanted had the recipient centre co-ordinator not suggested contacting the paediatric transplant centre. Offering DCD hearts to this paediatric centre is now a routine part of the process. This case study highlights how team working and innovative thinking can push boundaries and save lives.

P25

Solid organ transplantation from deceased donors with infective endocarditis: the UK experience

Dr George Greenhall[1,2], Dr Matthew Robb[1], Miss Chloe Brown[1], Mrs Rachel Johnson[1], Dr Laurie Tomlinson[3], Mr Chris Callaghan[4,2], Mr Christopher Watson[5,6,7]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]King's College London, London, United Kingdom. [3]London School of Hygiene and Tropical Medicine, London, United Kingdom. [4]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [5]University of Cambridge, Cambridge, United Kingdom. [6]The Cambridge NIHR Biomedical Research Centre, Cambridge, United Kingdom. [7]NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation, Cambridge, United Kingdom

Background: Deceased donors with bloodstream infections carry a risk of infection transmission to the recipients of their organs. Donor infective endocarditis may impact on patient or allograft survival following transplantation. There is little evidence to guide clinicians in this area. We examined the utilisation, safety, and long-term survival of allografts from donors with infective endocarditis in the UK.

Methods: We performed a retrospective analysis of solid organ transplants between 2001 and 2018 using data from the UK Transplant Registry. Our primary outcome was infection transmission, defined as a microbiological isolate in the transplant recipient matching the organism in the donor in the first 30 days after transplantation. We compared all-cause allograft failure up to five years between kidney and liver transplants from donors with infective endocarditis and matched control transplants (matched with a ratio of 4:1). We also examined the relationship between donor infective endocarditis and organ utilisation.

Results: Our study included 88 transplants from 42 donors with infective endocarditis. We found no cases of infection transmission. There was no difference in allograft failure between transplants from donors with infective endocarditis and matched control transplants among either kidney (HR 1.48, 95% CI 0.66-3.34) or liver (HR 1.14, CI 0.54-2.41) transplants. Compared to matched controls, donors with infective endocarditis donated fewer organs (2.3 vs 3.2 organs per donor, $p<0.001$) and were less likely to become kidney donors (OR 0.24, CI 0.13-0.42).

Conclusion: Our findings suggest that solid organ transplantation from selected donors with infective endocarditis has acceptable safety and long-term allograft survival, supporting a cautious increase in the utilisation of kidneys from these donors in the UK.

Figure 1

All-cause allograft failure in kidney transplants from deceased donors with infective endocarditis and matched control transplants

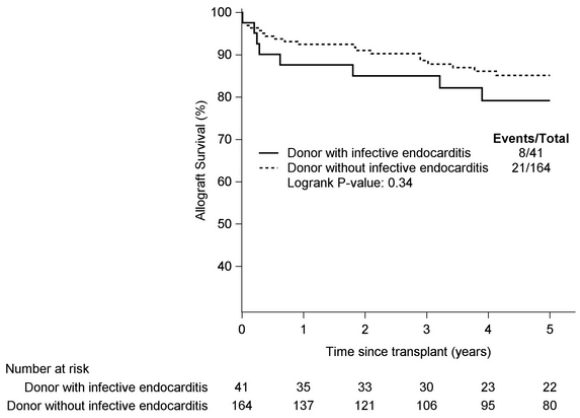
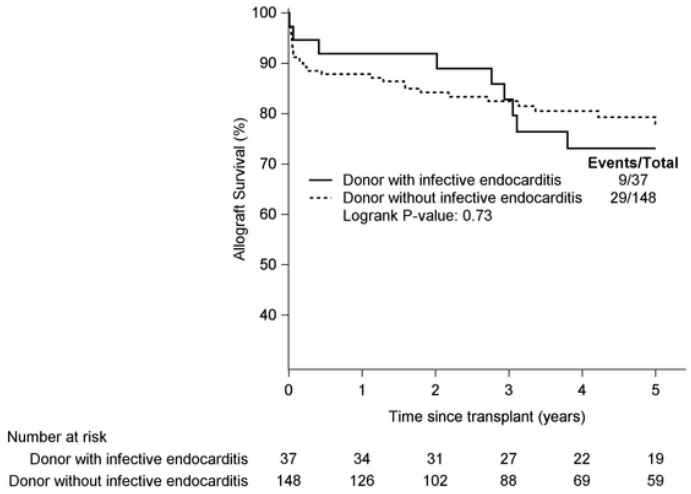


Figure 2

All-cause allograft failure in liver transplants from deceased donors with infective endocarditis and matched control transplants



P26

Psychological factors associated with medication nonadherence in kidney transplant patients

Ms Rosie Heape[1], Mr Arcan Altinar[1], Ms Sharon Frame[2], Ms Catherine Lacey[2], Miss Linda Ross[2], Ms Hayley Wells[2], Ms Eilish Nugent[2], Dr Rohan Sundramoorthi[2], Prof John Weinman[1], Dr Joseph Chilcot[1], Dr Antonia Cronin[1,2]

[1]King's College, London, United Kingdom. [2]Guy's and St. Thomas NHS Trust, London, United Kingdom

Introduction: Adherence to immunosuppression is important for transplant graft and patient survival. However, literature suggests a high prevalence of nonadherence among transplant patients. Published research has identified associations between perceptions of graft, beliefs about medication and nonadherence. In this study we investigated whether, and if so to what extent, these psychological factors are able to predict nonadherence.

Methods: We conducted a cross-sectional analysis (*N*=220) from a longitudinal cohort of long-term kidney transplant recipients followed-up between 2013 and 2020. Patients completed questionnaires including (i) Medicines Adherence Report Scale (MARS), (ii) Brief Illness Perception Questionnaire (BIPQ) and (iii) Beliefs about Medicines Questionnaire (BMQ).

Results: N=220 completed questionnaires in 2019. Of these 139(63.2%) were male and 81(36.8%) were female with mean age 53.24 (range 20-79 years, *SD*=12.84). Univariate analyses revealed nonadherent patients were significantly younger (p=0.038), had lower perceived treatment control (p=0.006), poorer understanding of risk of graft failure (p<.001) and greater concerns about medication (p=0.007). Hierarchical logistic regression found understanding of risk of graft failure to be a significant predictor of medication adherence, with a one score increase in understanding reducing the odds of being adherent by a factor of 0.79 (p=0.002, CI 0.68, 0.92).

Discussion: Our findings highlight the importance of tailoring interventions to increase understanding of risk of graft failure among kidney transplant patients. Treatment control and concerns surrounding medication could also be considered targets for interventions. In addition, since younger patients appear at risk for nonadherent behaviour, adherence support should be provided for them in adult nephrology services.

Table 1. *Univariate analyses of variables between groups*

Variable	Sample Mean (*SD*) (*N*=220)	Group Mean (*SD*)		*p* value
		Adherent (*n*=95)	Nonadherent (*n*=125)	
Age	53.2 (12.84)	55.29 (12.15)	51.67 (13.17)	.038*
Treatment Control	8.45 (2.02)	8.69 (2.13)	8.26 (1.91)	.006**
Understanding	7.94 (2.12)	8.53 (1.74)	7.50 (2.28)	<.001**
Concerns	11.67 (3.80)	10.88 (3.91)	12.27 (3.63)	.007**

Note. *$p < .05$. **$p < .01$.

Table 2. *Hierarchical Binary Logistic Regression Between Understanding and Adherence (N=220)*

Variable	*B (SE)*	Wald	*df*	*p*	*OR*	95% CI
Understanding	-0.21 (0.08)	9.62	1	.002	0.79	[0.96, 1.12]

Note. Adjusting for age, eGFR, years since transplantation, treatment control beliefs and concerns about medication. *SE* = standard error, *df* = degrees of freedom, *OR* = odds ratio, *CI* = confidence interval.

P27

Factors associated with prolonged hospital stay following renal transplantation: a nurse-led audit

Miss Leigh Whinham[1], Miss Carrie Scuffell[1], Mrs Tracey Graham[1], Dr Sachin Teelucksingh[1], Mr Aimen Amer[2]

[1]Freeman Hospital, Newcastle upon Tyne, United Kingdom. [2]Freeman Hospital, Newcastle upon Tyne, United States Minor Outlying Islands

Introduction: Existing NHS pressures to reduce length of stay (LOS) have been compounded by the recent SARS COV-2 pandemic. The national average median LOS for adult recipients of renal transplantation is eight days. The aim of this project was to quantify our local LOS and identify risk factors in current practice that are associated with delayed hospital stay.

Method: We conducted a nurse-led, retrospective single-centre audit of living and deceased donor- adult renal transplant recipients over a six-month period. Transplant data was collected from electronic medical records and nursing documentation. Length of stay was calculated and correlated with potential risk factors for prolonged stay.

Results: The study included 64 renal transplant recipients (40% living donor transplant recipients) with an average age of 52yr. The overall median LOS of was 12 days (10 and 13 days for recipients of living and deceased donors respectively). Recipient weight on postoperative day 7 was found to be significantly associated with prolonged LOS if not within 2kg of admission weight (18±13.7d vs 11±4.8d if within 2kg of dry weight; P=0.01) Other recipient factors significantly associated with prolonged stay included persistently raised blood pressure and the need for considerable social and physical support. Patients with LOS **≤** 9 days had earlier catheter removal (postoperative day 5±0.9 vs 8±5.8 when discharged on day 10 or later) earlier patient education (postoperative day 7±1.3 vs 13±7 respectively) and lower average drain output (7±27.5ml vs 71±201.6ml respectively) ($p<0.05$).

Discussion: Our median LOS for renal transplantation was higher than the national average. Contributing risk factors included fluid status exceeding 2kg of dry weight on day 7 and delayed catheter removal and patient education. We have now implemented a patient-centred Enhanced Recovery after Surgery (ERAS) programme to address these contributing factors with the ultimate goal of reducing length of hospital stay and improving future patient outcomes.

P29

Organ donation week 2020: music video 'a second dance'

Miss Catherine McKeown

Public Health Agency, Belfast, United Kingdom

Introduction: Why create this?

- In Northern Ireland there are 115 people awaiting an organ transplant and last year 11 people died while awaiting a transplant
- To make an impact for Organ Donation Week 2020
- As a vehicle for promotion and education

What was it?

- Production and release of a powerful music video: A Second Dance
- Initially commissioned by well-known local signer, via a renowned local composer for the poignant service of Remembrance and Thanksgiving to celebrate and give thanks to organ donors and their families who allowed others a second precious chance at life. It met with profound emotion by those in attendance hence a professional music video was produced

Case Presentation

- It captures the essence of organ donation and its impact on the lives of those who receive
- It acknowledges the gift of life organ donation gives, but also a moving reminder that we need to do more to encourage individuals to join the Organ Donor Register
- Reminds people to share their organ donation decision, this being equally as important as joining the Register
- An appeal about changing hearts, minds and culture
- Features local transplant recipients, illustrates the difference transplantation has made, and ends starkly with a young 4 year old boy still awaiting his heart transplant
- Launched centrally then cascaded widely by all partners

Outcome

- Truly original piece, professionally written, performed and produced
- Major contribution to education and promotion of organ donation
- 5-fold traffic increase to organdonationni.info
- 160% increase in ODR opt-ins
- Highly engaging: reaching over **132,000 people** and **110,000 views** on top performing channels

Discussion

Key learnings:

- Importance of using real local people and faces, allowing the human angle to speak volumes and increase reach
- Partnership working to maximise exposure and engagement

To truly appreciate its power, enjoy the video here.


Organ donation saves lives
Rose
Heart transplant
Jean
Kidney transplant
Patricia
Liver transplant
Join the Organ Donor Register
and share your decision with your loved ones.
organdonationni.info
#OrganDonation #YesIDonate #ASecondDance

P30

Kidney transplantation from Hepatitis C (HCV) positive donors into Hepatitis C-negative recipients; single centre UK experience

Dr Sarah Browne[1], Dr Brendan Healy[2], Robert Bradley[1], Rhys Oakley[1], Dr Rachel Jones[2], Sharon Warlow[1], Bethan Travers[1], Kymm O'Connor[1], Mr Christopher Chalklin[1], Dr Sian Griffin[1], Dr Ahmed Elsharkawy[3], Mr Michael Stephens[1]

[1]University Hospital of Wales, Cardiff, United Kingdom. [2]Public Health Wales, Cardiff, United Kingdom. [3]University of Birmingham, Birmingham, United Kingdom

Introduction: Multiple international studies report the safety of transplanting kidneys from Hepatitis C virus (HCV) positive donors to HCV negative recipients with initiation of pan-genotypic therapy after detecting transmission post-transplantation. Sustained virological response (SVR) to treatments have been close to 100%. A UK Position Statement supports the use of organs from HCV viraemic and increased infectious risk donors for HCV negative recipients. We report the first UK series of transplants of organs from HCV positive donors into HCV negative recipients.

Method: Cardiff Transplant Unit developed a protocol for considering kidney offers from HCV positive donors in 2019, in close collaboration with patients, commissioners, and colleagues in virology and infectious diseases. Recipients were tested for evidence of HCV using serum PCR on day 3-7 and day 10-14. Direct Acting Antiviral (DAA) therapy was initiated as soon as recipients were detected to be viraemic, with the choice of agent influenced by renal function at time of therapy initiation.

Results: Between May 2019 and January 2020, twelve patients (9 male, 3 female) received kidney transplants from 8 HCV positive donors. The mean (+/- SD) age of recipients was 57.5 +/- 9.8 years. Six of the donors were subsequently demonstrated to be viraemic at the time of donation using PCR technology (genotype 3a, n=3; genotype 1a, n=2; genotype 1b, n=1). These six donors facilitated 9 transplants and all 9 recipients subsequently became viraemic themselves within 14 days of transplant. A twelve-week course of pan-genotypic therapy was completed by all nine patients (four with Glecaprevir/Pibrentasvir and five with Sofosbuvir/Velpatasvir). The DAA were well tolerated. None of the patients had a clinically significant increase in aminotransferase levels. All patients received tacrolimus and mycophenolate mofetil (with or without steroids) as maintenance immunosuppression with regular monitoring of tacrolimus levels. Post transplantation kidney function has been good; median latest eGFR 55ml/min (IQR 38ml/min-65ml/min). One patient underwent graft nephrectomy 10 days post-transplant due to renal vein thrombosis (unrelated to HCV or DAA therapy). SVR has been achieved in all patients at 12 and 52 weeks.

Discussion: The first successful cases of transplantation of HCV positive donors to HCV negative recipients in the UK are presented. The outcomes support the wider utilisation of organs from HCV positive donors in the UK.

P31

The fast (tracked) heart: the perils, pitfalls, and considerations when accepting a Fast track heart for transplantation. A single centre case study series

Mr Daniel White, Miss Sarah Claydon, Mr Richard Quigley

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Fast-track offers occur infrequently and arise after the initial accepting centre later declines but retrieval teams are onsite, but when they do centres need to be prepared and ready to accept to ensure they secure the organ. We looked at our experiences after accepting and transplanting 3 DBD hearts as a result of fast-track offering to see if there were any common themes and areas for shared learning.

Case presentation: There were 2 occasions where we were able to accept fast-tracked heart offers for urgent listed inpatients, and 1 occasion where we accepted a heart for a routine listed patient from home. The over-arching theme is that the offers were received during day time hours, with the relevant parties on-site to discuss the offer face to face and to facilitate timely escalation to ascertain bed availability. The two that were accepted for urgent listed inpatients where fairly straight forward, requiring minimal prepping for surgery. The 1 patient brought in from home required a great deal more planning, but we were able to admit the patient direct to theatre and very quickly allow the retrieval team to proceed.

Outcome: Thanks to a series of fortunate events, quick action from the coordinators and some forgiveness from SNODs and retrieval teams, 3 patients received lifesaving heart transplants from donors where the organs would otherwise have been wasted.

Discussion: Our experience has shown that in order to accept a fast-tracked heart offer, the key team members have to be at the hospital site to facilitate effective communication and quick patient mobilisation to ensure minimal delay to the retrieval process. We also require the understanding of the SNODs and retrieval teams that once these organs are offered, receiving centres need time to prepare the patient in order to minimise ischaemic time.

P32

Retrospective study on reduced NDT testing

SNOD Helen Brown, SNOD Rachel Jones

NHSBT, Leeds, United Kingdom

Introduction: A small study to identify why the neurological testing rate had dropped significantly and the primary reasons given for neurological death test not being performed. The impact of instability of the potential donor may lead to loss of organs for transplant. The key performance indicators (KPI) for August indicated that the neurological testing rate had dropped significantly which led to a review of 11 patients. An analysis of the Potential donor audit (PDA) was undertaken. A comparison with the previous year and national figures was undertaken. Each referral that indicated a need for neurological death testing were reviewed.

Outcome: The outcome of the review indicated that the KPI's were inaccurate and not as low as was first indicated. Outcomes from data collection and the cross over from the referral to the Potential donor audit (PDA) requires clarification. The review indicated some education is required around managing to pre testing the potential donor to the multidisciplinary team, including SNODS bedside nurses and clinicians.

Discussion: One suggestion being a care bundle for the suspected neurological dead patient. To include fluid management, correction of electrolytes, cardiovascular stabilization, diabetes insipidus, ventilation parameters and recruitment measures.

P33

An avoidable Adoport® adverse drug event

Dr Matthew Gittus, Dr Simon Curran

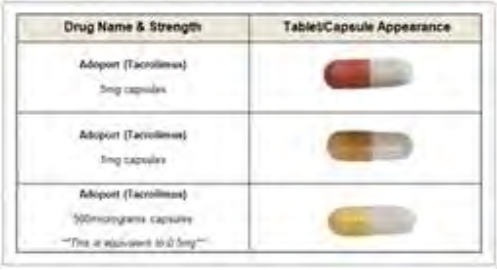
Sheffield Teaching Hospitals Trust, Sheffield, United Kingdom

Introduction: Adverse Drug Events (ADEs) are common in the general population with 10-20% experiencing an adverse reaction during their stay in hospital (Weiss et al, 2010). Taber et al (2012) demonstrated that the rate of ADEs in transplant recipients is at least equal to non-transplant patients. After transplantation regular immunosuppressive drug administration is crucial with even small deviations potentially leading to acute rejection, viral infections and graft loss. This is particularly important in the immediate post-transplantation period of increased psychosocial stress.

Case presentation: Middle-aged Caucasian man received a DCD transplant (1,1,1 mismatch; CMV negative/negative). No intra- or post-operative complications. Tacrolimus levels stable throughout admission (range 9-10.5 µg/L). Transplant education provided by both renal pharmacy team and transplant nurse. Medications were detailed on a dedicated administration chart for patient use. At discharge he was receiving Adoport® 5mg twice daily. At the initial outpatient transplant review his tacrolimus levels were elevated with a trough level of 22.5 µg/L. There was no obvious cause identified for the high tacrolimus level with no new medications, liver dysfunction or new onset diarrhoea.

Outcome: In the transplant clinic he confirmed his medications taking 5mg Adoport® twice daily. On review of his prescription at discharge he had been prescribed five 1mg capsules but in the outpatient setting was issued with 5mg capsules. On discussion with the patient it was identified that he had been taking five 5mg capsules twice daily on repeat prescription from the pharmacy.

Discussion: This case study represents a potentially common and under-reported drug error in renal transplant patients. It highlights the importance of clear communication with patients regarding their medications. Following discussion with patients, senior clinicians and the pharmacy team a range of interventions were developed using the PDSA cycle approach. These included further patient education on different preparations of adoport; junior doctor teaching and summary poster; and summary card for patients.



New Transplant Medication Guide

Drug Name & Strength	Tablet/Capsule Appearance	Box Appearance
Adoport (Tacrolimus) 5mg capsules		
Adoport (Tacrolimus) 1mg capsules		
Adoport (Tacrolimus) 500microgramc capsules **This is equivalent to 0.5mg**		
Myfenax (Mycophenolate mofetil) 500mg tablets		
Myfenax (Mycophenolate mofetil) 250mg capsules		

P34

Planning safe withdrawal of life sustaining treatment for DCD donors' in theatre

Mrs Odile Chapman, Mrs Sharon Henry, Mrs Joanne Pattemore, Mrs Hannah Squibbs, Mrs Rachel Stone, Mr Brian Tierney, Mrs Emma Walters

South West Organ Donation Team, Exeter, United Kingdom

Introduction: Implementing change in practice comes with its challenges. Working collaboratively and cohesively strives for best possible outcomes.

Method: A group of Specialist Nurses in the South West ODT developed a DCD Theatres Focus Group with shared objective to safely standardising change in practice. Each Specialist Nurse in the focus group represented Level 1&2 Trusts in the region, the busiest referring unit for donation and previous experience of DCD WLST in theatres.The location of withdrawal of life-sustaining for potential DCD donors has been largely carried out in the Anesthetic Room in various regions across the UK. The South West region has previously WLST on ICU and there is no standardised MPD in NHSBT for this process to be carried out in Theatre environment.

Objective: "The document is intended to offer guidance and to establish a standardised practice, identifying key responsibilities for the withdrawal of life sustaining treatment outside of the Intensive Care environment for DCD organ donors. To reduce the warm ischemic time and optimise organ utilization for transplantation. To provide the highest standard of end of life care for both patient and their family, maintaining dignity through removing the need for rapid transfer between ICU and Theatres following certification of death."

Conclusion: Together with the power of Virtual Networking, the focus group was able to gain insight from Level 1 Trusts in London, providing an open forum for shared practice. Implementing safe WLST for DCD donor in Theatres has been completed by sharing this shared objective in safe and efficient timely manner.

Education & learning: Presenting at Regional Collaborative. Improving the safety, dignity and maxiumising transplant outcomes by WLST in Theatre environment. Each specialist Nurse represents busiest referring unit South West ODT, providing geographial support to implement MPD into practice. Implementing change in practice through regional focus group. Sharing experiences and perspectives has strengthened planning of MPD. Promoting the benefits of collaborative working.

P35

HLA typing by NGS in our solid organ patient cohort

Miss Fiona Powell, Miss Ambika Camille, Ms Betia Nouri, Miss Nabila Ali, Ms Abigail Levy, Mrs Rachel Smith, Mrs Arthi Anand

Imperial Healthcare NHS Trust, London, United Kingdom

Introduction: Next generation sequencing (NGS) has recently been implemented in our centre for solid organ patients and donors. This has enabled us to achieve allelic resolution typing resulting in the discovery of rare alleles. These were previously unidentified by medium/high resolution typing techniques. Here we outline how this has affected the confirmatory typing of solid organ donors and the ODT registration of solid organ patients.

Methods: HLA typing was carried out by NGS using GenDx MX6-1 HLA typing kits (HLA-A, -B, -C, -DRB1, -DQB1 and -DPB1). Sequencing reaction was performed using the Illumina iSeq platform and results analysed on GenDx NGS engine.

Results: Example1- Confirmatory typing of ODT offer type.

ODT Offer Type	Epitype Group	NGS Typing	Epitype Group
DPB1*01:01/127:01/667:01	**EDP*01**	DPB1*1050:01	**EDP*01**
DPB1*104:01/946:01	**EDP*03**	DPB1*1049:01	**EDP*03**

Alleles fall within the same DP epitype group therefore the NGS typing confirms ODT offer type.

Example 2- Solid organ patient rare alleles.

	Rare Allele	Serological equivalent
Patient 1	A*02:22	A2
Patient 2	C*04:82	Cw4
Patient 3	DQB1*03:78 *03:104	DQ3, DQ3

Discussion: HLA typing by NGS has provided additional HLA typing information including the identification of rare or novel alleles. This is achieved through typing of additional exons and reduced ambiguity. Confirmation of ODT offer types in our lab is achieved through NGS typing. Medium resolution kits used for initial offer type to do not provide HLA typing to the same resolution therefore types can initially appear discrepant. This can be clarified in the case of DPB1 typing through the use of DP Epitype groups. Patients with rare alleles discovered by NGS typing will be registered with ODT according to their serological equivalents. These patients are still able to produced HLA antibodies against the common variant of that allele which needs to be considered during HLA antibody analysis and UDA listing.

P36

Impact of COVID-19 on ODT research

Mrs Clare Denison[1], Ms Liz Armstrong[2], Ms Hannah Tolley[3], Ms Margaret Stevens[4]

[1]NHSBT, London, United Kingdom. [2]NHSBT, Birmingham, United Kingdom. [3]NHSBT, Cambridge, United Kingdom. [4]NHSBT, Basildon, United Kingdom

Introduction: The global COVID-19 pandemic greatly affected organ donation and transplantation rates during 2020. As a consequence of reduced donor numbers and transplant centre closures, the number of organs available for research also fell significantly.

Methods: NHSBT's ODT Research team are copied into all research organ offers and keep track of these organs' fates.

Results: During the first national lock down in the spring of 2020, the number of un-transplantable organs offered for research dropped to an all-time low of 10 offered in May, with 2 of these accepted. Rates began to recover as lock down eased in July. Matching donation and transplantation again, the number of research offers has decreased as the U.K. has entered the second wave.

Discussion: Many of our studies are clinician-led and the first wave saw them return to the front lines. Universities also completely shut down and the view from NIHR was that any research that could take place at that time was focused on COVID-19. As a consequence, almost all research studies closed during spring 2020, leading to reduced acceptance of the few research organs available at that time. The second wave in Autumn 2020 saw universities remain open and NIHR state that non-COVID-related work should continue, however the number of research organ offers and acceptances has started to decrease again.

P37

NHS Blood and Transplant Organ Donation and Transplantation Research Leads Study Day 2020

Mrs Clare Denison[1], Ms Liz Armstrong[2], Ms Hannah Tolley[3], Ms Margaret Stevens[4]

[1]NHSBT, London, United Kingdom. [2]NHSBT, Birmingham, United Kingdom. [3]NHSBT, Cambridge, United Kingdom. [4]NHSBT, Basildon, United Kingdom

Introduction: Evaluation of the ODT Research Leads Study Day.

Methods: In Oct 2020 the ODT Research Team held an on-line Study Day for the Regional Research Leads. Following this a survey link was sent to evaluate the content of the day.

Results: 12 Regional Research Leads attended the study day. 7 of these completed a on-line survey to evaluate the content of the day. All agenda items were evaluated as either 'Excellent' or 'Good'.

Discussion: The Research Leads were particularly keen to repeat these study days on an annual basis in order to maintain their skills and knowledge and also to provide them with some empowerment within their own regions when involved in training their teams for research studies. The invitation to external speakers to present results and updates related to research that had involved the Specialist Nurses was also widely welcomed, as this allowed a feedback loop to be completed and the nurses to understand the impact their role can have on research within the field of Organ Donation and Transplantation.

P39

Post-transplant lymphoproliferative disorder (PTLD) in a 26 year old female renal recipient - what you can learn from our experience

Dr Panoraia Papadopoulou[1,2], Dr Ingi Elsayed[1], Mr Ajay Kumar Sharma[3], Associate Professor Ahmed Halawa[3]

[1]Department of Nephrology, Royal Stoke University Hospital, UHNM NHS Trust, Stoke on Trent, United Kingdom. [2]University of Liverpool, Institute of Learning and Teaching, School of Medicine, Liverpool, United Kingdom. [3]Faculty of Health and Science, University of Liverpool, Institute of Learning and Teaching, School of Medicine, Liverpool, United Kingdom

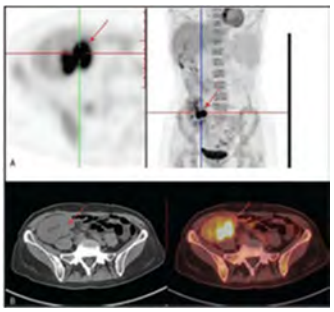
Introduction: PTLD accounts for almost 20% of all cancers occurring in solid organ transplantation. It represents infiltration of B cells driven by EBV/CMV infection in the background of severe immunosuppression and impaired T-cell immune surveillance. Current case presents PTLD 7 months post 2nd renal transplantation and reflects on early detection/prevention and management.

Case presentation: A 26-year old female presented with 2/52 fatigue, fever, night sweats and abdominal pain, 7 months post 2nd cadaveric renal transplant EBV/CMV mismatched. Medical history included cyclophosphamide-treated proliferative lupus nephritis, tacrolimus-based immunotherapy and antirejection treatment. On examination, there was tenderness of the right iliac fossa with femoral lymph nodes. Patient had anaemia, leukopenia, deterioration in renal function, elevated LDH, EBV PCR 18,752 copies/mL and CMV PCR 300 copies/ml. CT abdomen showed an 8cm soft tissue mass obstructing the graft. Biopsy confirmed polymorphic PTLD (pictures 1,2).

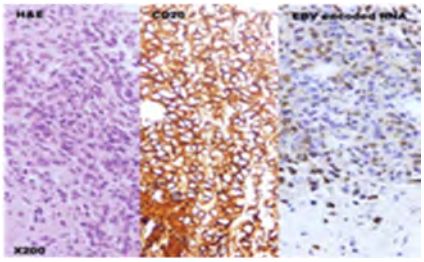
Outcome: The patient was treated with reduction of immunosuppression and withdrawal of both Tacrolimus and Mycophenolate Mofetil. Prednisolone 5 mg daily remained and EBV load monitored weekly. Immunotherapy with CD 20 monoclonal antibody, rituximab, commenced weekly for 4 weeks. Complete remission was achieved in 3 months, Kidney function returned to baseline and 18F Fluorodeoxyglucose PET-CT revealed no sign of lymphoma. Four-year post diagnosis, patient remained disease-free as demonstrated on repeat 18 FDG PET- CT, with stable graft function and negative EBV/CMV viral load. Immunosuppression remained minimal.

Discussion: Seronegative EBV/CMV recipients accepting seropositive grafts have 24 times higher incidence rate of PTLD, likely within the 1st year post transplantation. Significant increase in the viral load can predict/diagnose early PTLD. Lower immunosuppression with reduction/withdrawal of Tacrolimus and rituximab use can be effective for prevention and treatment. Ganciclovir has proved to be of equal value. FDG PET-CT is highly sensitive to detect disease extent and response to treatment.

Picture 1:



Picture 2:



P40

Service improvement trial of ClearMask equipment in organ donation, family approach conversations

Lisa Tombling

NHS Blood and Transplant, Northern Region, United Kingdom

Introduction: Effective communication is key to the sharing and understanding of complex issues, especially in situations of heightened emotion such as bereavement/anxiety. In the UK in 2019/20 there were 3279 organ donation approach conversations with potential donor families. These conversations involve the breaking of bad news, the sharing of complex clinical information and a request for a family decision regarding donation.With management of the current pandemic and use of infection prevention and control measures, the concern is that artificial barriers to communication (PPE masks) may negatively impact the family approach conversation, influencing family decision-making and with overall detriment to the family experience of EOLC both in the immediate and longer term. In general humans tend to process faces as a whole, rather than focusing on individual features, says psychologist Rebecca Brewer, who studies the role of facial expressions in the way we communicate emotion at the Royal Holloway University of London. “When we cannot see the whole face, such holistic processing is disrupted.”

Methods: The trial aims to evaluate the experience of the collaborative team and family, where masks are utilised as part of infection prevention measures, and to compare experiences between CLEAR Mask and standard surgical mask use. A purposive sample of ‘family approaches’ in 2 Organ Donation Teams-Northern and Yorkshire was undertaken with the aim of capturing qualitative data on a minimum of 50 approaches utilising the CLEAR Mask. A survey was created to evaluate the user experience and engagement with the team during the trial period has involved a Specialist Nurse champion in each region.

Results: The study is still ongoing with the initial timeframe for data collection extended due to:

- Reduction in number of approaches relative to comparable timeframe in 2019/20
- Delay in accessing supplies for both regions
- Addressing concerns from Trust IPC
- Overcoming barriers to utilisation including user engagement

Discussion: Outcomes of the trial are anticipated by end of January 2021 and will influence decision-making around procurement and the utilisation of masks for all regional teams

P41

Boerhaave's syndrome complicating kidney transplantation in a patient with Crohn's disease

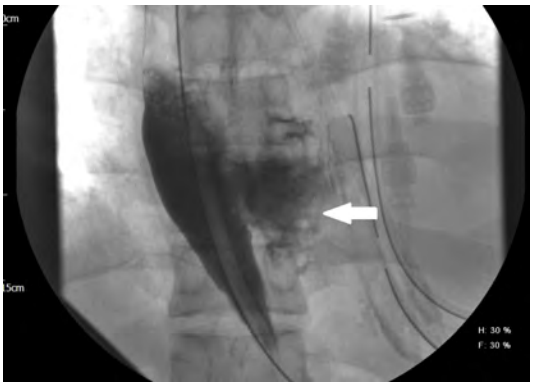
Dr Zain Ul Abideen, Dr Varun Philip, Dr Andrew Connor, Dr Imran Saif

University Hospitals Plymouth NHS Trust, Plymouth, United Kingdom

Introduction: Spontaneous oesophageal rupture (Boerhaave's syndrome) is a rare and potentially fatal condition. It results from a transmural tear, mostly of the distal oesophagus induced by a sudden increase in intra oesophageal pressure combined with negative intra thoracic pressure. Untreated, it carries a mortality of more than 90%. Even with surgical intervention, mortality rates of up to 40% have been reported. It has rarely been reported in kidney transplant recipients.

Case presentation: A 64 year old male patient underwent a deceased donor kidney transplant. Standard immunosuppression, including basiliximab and methylprednisolone, and then mycophenolate, tacrolimus and prednisolone, was given. He had a history of extensive Crohn's disease. He developed vomiting and severe chest pain after 24 hours. A Computed Tomogram scan showed oesophageal rupture with hemomediastinum and active bleeding. He was managed with multiple thoracotomies to drain blood and collections, intravenous antibiotics and antifungals to treat sepsis and was kept nil by mouth until the oesophageal defect closed. Figure 1 depicts the initial oesophageal defect in the lateral wall, evidenced by contrast extravasation on fluoroscopy (white arrow)

Figure 1 : Contrast Fluoroscopy of the Oesophagus revealing a contrast leak



He received total parenteral nutrition and percutaneous enteral gastrostomy feeding to meet nutritional needs. Tacrolimus was given sublingually and mycophenolate was stopped.

Outcome: The oesophageal defect closed with the above management. His graft function remained optimal throughout. He was discharged after a stay of 84 days.

Discussion: This rare complication carries high morbidity. Only a few cases have been reported after transplantation, occurring: in the first week post transplantation; after treatment of rejection with intravenous steroids; and, a few months post transplantation. Our literature search did not identify any

cases of oesophageal rupture complicating transplantation in patients with Crohn's disease. Viral infections and immunosuppressants are recognised to cause oesophageal pathologies and predispose.

Lesson: Chest pain following vomiting in a post-transplant patient should raise a concern regarding oesophageal perforation. Infection is a major risk and immunosuppression must be tailored accordingly. A multi disciplinary approach including psychological support for the patient is essential.

P42

Virtual consultation in the Covid era - enhancing patient handover

Ms Amy Walton[1], Mr Clive Lewis[2], Ms Debra Thomas[2]

[1]Royal Papworth Hospital, Cambridge, United Kingdom. [2]Royal Papworth, Cambridge, United Kingdom

Introduction: Transplantation is the gold standard in treatment of end stage following failure of medical therapy. Primary outcomes following transplantation include short/long term survival and quality life. During the covid-19 pandemic all outpatient appointments were suspended, leaving a group of young adults unable to transition from paediatric to an adult facility.

Method: We identified that the transition to an adult centre is integral in the young adults medical care. This ensures confidence of the patient and family that continuity of long term care would be met. A formal patient handover and meeting of the patient and family is vital for this transition process. The pandemic precluded this essential meeting. A virtual consultation was set up between Great Ormond Street and Royal Papworth Hospital. A formal handover between consultant and nurses took place. Once all clinical data was collated by the receiving hospital (Papworth) a virtual meeting between patient, family and medical team was undertaken. All aspects of care were handed over and patient/family expectations met. This was then followed up with a welcome to RPH Pack and first OPA. This ensure continuity of care.

Result: The virtual consultation allowed for 6 lung transplant and 1 heart transplant patients to be transitioned. This allowed for a safe and thorough handover of patient care and ongoing needs. It also allowed the patient to discuss any questions and alleviate any anxiety regarding transitioning to an adult centre.

Discussion: Having virtual consultations during covid-19 has allowed the safe transition of patients to an adult centre. The absence of virtual consultation would have delayed transition until the pandemic resolved increasing patient anxiety.

P43

A case of immune thrombocytopenia secondary to ganciclovir-resistant cytomegalovirus infection successfully treated with Letermovir in a kidney transplant recipient

Dr Richard Powell, Dr Jason Moore

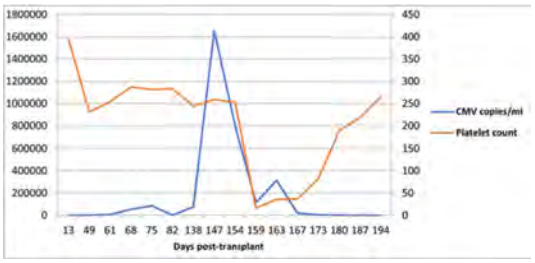
Royal Devon & Exeter Hospital, Exeter, United Kingdom

Introduction: Cytomegalovirus (CMV) is a ubiquitous herpesvirus that can reactivate in immunocompromised transplant recipients or be acquired as a de novo infection. Tissue-invasive disease often has multiorgan involvement, including myelosuppression, and is associated with significant morbidity and mortality. Ganciclovir is the first line treatment, although resistance occurs in 1-2% of cases which can cause refractory CMV disease.

Case presentation: A 43-year-old man with end-stage kidney disease secondary to diabetic nephropathy received a DBD transplant from a 56-year-old donor with a 2:0:0 HLA mismatch. He was given valganciclovir prophylaxis due to donor positive/ recipient negative CMV status. He received Basiliximab and methylprednisolone induction followed by tacrolimus and prednisolone maintenance immunosuppression. Two weeks post-transplant he suffered acute severe T-cell and antibody-mediated rejection which was treated with pulsed methylprednisolone, anti-thymocyte globulin, plasma exchange, intravenous immunoglobulin and mycophenolate. He achieved stable, although suboptimal, graft function (creatinine 300 umol/L). One month later he developed an asymptomatic CMV viraemia (419 copies/ml). Within two months he became leukopaenic and the CMV PCR had sharply risen to 1,655,204 copies/ml despite valganciclovir treatment. CMV genotyping confirmed ganciclovir resistance with an A594T/M/A/V mutation in the CMV UL97 (ganciclovir kinase) gene. Mycophenolate was withdrawn. Shortly afterwards, he presented with epistaxis and bleeding lower limb skin lesions. Blood tests revealed profound thrombocytopenia (platelet count 16). Bone marrow examination was unremarkable and serum antiplatelet antibodies were detectable. A diagnosis of immune thrombocytopenia secondary to CMV infection was made.

Outcome: Our patient received intravenous immunoglobulin and was given Letermovir for a total of one month. There was a rapid improvement in CMV titres and platelet count (see graph). No reported adverse drug effects were reported. CMV PCR remains undetectable and graft function remained stable throughout.

Discussion: The treatment of drug-resistant CMV disease is challenging. For example, the nephrotoxicity associated with Foscarnet can threaten allograft function. Letermovir is a CMV DNA terminase complex inhibitor that was recently approved for CMV prophylaxis following hematopoietic cell transplantation. Its use as salvage therapy for refractory CMV infection in solid organ transplant recipients is limited to case reports but it appears to be effective and well-tolerated. This unique case suggests that Letermovir may be a useful treatment option in drug-resistant CMV infection following renal transplantation.


1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
450
400
350
300
250
200
150
100
50
0
13 49 61 68 75 82 138 147 154 159 163 167 173 180 187 194
Days post-transplant
CMV copies/ml
Platelet count

P44

Super Saturday! – amazing collaborative working using virtual platforms and remote support

Mrs Judith Martin[1], Mrs Karen Davis[2], Mrs Lucy Barnes[3], Mrs Kate Hurley[2], Mrs Fiona Rogers[3], Mrs Gail Melvin[3], Mrs Victoria Price[4]

[1]NHSBT, Birmingham, United Kingdom. [2]NHSBT, Oxford, United Kingdom. [3]NHSBT, Cardiff, United Kingdom. [4]NHSBT, Bristol, United Kingdom

Introduction: The cross countries cluster (Midlands, South West, South Wales and South Central teams) have worked collaboratively, supporting each other throughout the COVID pandemic. During the pandemic staffing was reduced and rotas were challenging. At its worst Midlands had <33% competent on the rota. In order to facilitate donation cross cover was often required but at times with no staff we had to be creative.

Case: Super Saturday! A patient was referred to the Specialist Nurse for Organ Donation working from home. The closest Specialist Requester was 142 miles (2.5 hrs away) The on call SNOD did not start until midday and was 80 miles away with a 1 hr 45 minute journey. Decision made for the SR to do a formal approach via zoom and if achieved consent to continue with completion of the documentation. The SNOD WFH started remote characterisation whilst the on call SNOD mobilised. Prior to COVID this type of working was not considered and for those involved it was a first.

Outcome: The family gave their consent. The donor proceeded saving a young man's life.

Discussion: Anything can be achieved with lateral thinking and teamwork. The NHSBT and Trust staff involved felt that it was a really positive experience, as did the family. Can you build a rapport over zoom? We are so used to conversations face to face. Challenges we have faced throughout the pandemic have made us all less hesitant to use technology when required. Since then as a team we have facilitated remote consent to avoid lengthy delays for a family while mobilising a SNOD out of region. Remote support and characterisation were commenced and on this occasion it did not feel so alien as it was so successfully achieved on Super Saturday!

P45

A tool to improve best practice for deceased organ donation in acute hospitals within the North West organ donation region

Team Manager Nicky Hargreaves, Team Manager Jane Monks, Team Manager Dawn Lee, Team Manager Emma Thirlwall

North West Organ Donation Service, Liverpool, United Kingdom

Introduction: In 2013 the Team managers introduced changes to support the team's ability to focus on donor activity during the working day. This included taking donor referrals from via the regional pager. In the early stages the recording of these referrals was somewhat ad hoc, leading to confusion for the embedded SNODs as to whether a patient had been referred. As four individuals working on a rotational basis, we needed to provide consistency and reliability as to whether patients were being referred or not and to assure the team, we were capturing these referrals appropriately to enable accuracy for completion of the Potential Donor Audit.

Case presentation: We produced an excel spreadsheet with non-identifiable patient data including date, time, donor hospital, person referring, decision on suitability, outcome of donation. The spreadsheet evolved into the "Weekly Activity" disseminated to the Clinical Leads in Organ Donation. The initial purpose was to record patient referral activity of the hospitals, but it soon became a tool to highlight the use of and none use of best practice. The latter would be highlighted in red standing out from the rest of the referrals.

Outcome: The Weekly Activity is an accepted tool and continues to provide invaluable information for CLODs, Team managers and SNODs. The referral ID has since been included to enable the SNODs to cross reference the PDA. It provides timely information to support the monthly performance reviews as issues identified have already been addressed locally. During the COVID pandemic, it helped to identify the impact on referral and donation activity. It also now includes the new England legislative approaches.

Discussion: The weekly activity encourages collaboration towards best practice, ensuring situations are followed up, discussed and actioned timely. It is not intended to discriminate individually but highlight developmental opportunities. It provides an instant snapshot of donation activity giving the donation community sight of donor activity including donation success.

P46

Normothermic machine perfusion (NMP) of paediatric DCD liver and successful transplantation to adult recipient

Mr Satheesh Iype, Mr David Nasralla, Prof Joerg Pollok

Royal Free Hospital, London, United Kingdom

Background: Orthotopic liver transplantation to adult recipients from paediatric donors is rare. DCD livers from paediatric donors are often discarded because of size mismatch and inability to assess the function of the graft prior to transplant. We describe the first case of NMP on a paediatric DCD liver.

Methods: A standard DCD organ procurement was carried out from a 14 years old donor who sustained hypoxic brain injury from epileptic seizures. Liver was transported to Royal Free Hospital, London in standard cold storage and placed on normothermic machine for viability assessment.

Results: The donor had a body weight of 35 kg and BMI of 23. The donor blood results were as follows, lactate – 2.1, Bilirubin – 6, ALT – 176, ALP – 280 and GGT -67. The functional warm ischaemic time was 17 minutes. The donor liver had normal anatomy and weighed 720g. Normothermic Machine perfusion (Organox Metra) started after a cold ischaemic time of 6 hours and 39 minutes. Lactate level at beginning of perfusion was 9.29, improved to 2.76 in 2 hours. Glucose levels improved from 20.8 to 8 in 3 hours. ALT at 1 hour was 571. The liver was transplanted to a 65 years old male recipient who weighed 65 kg after 8 hours of NMP. He had multifocal hepatocellular cancer (within Milan criteria) and cirrhosis secondary to hepatitis B. The ALT on day 1 was 258 and the recipient made an uneventful recovery to be discharged on day 9. The graft function at 15 months after transplantation is normal.

Conclusion: It is feasible to assess the viability of small livers on NMP. NMP could potentially improve the utilization of small and marginal livers.

P47

Extracellular vesicles as biomarkers and therapeutic agents in kidney transplantation: a systematic review

Mr. James Ashcroft[1], Ms. Philippa Leighton[1], Ms. Tegwen R Elliott[1], Dr. Sarah A Hosgood[1,2], Professor Michael L Nicholson[1,2], Mr. Vasilis Kosmoliaptsis[1,2]

[1]1. Department of Surgery, University of Cambridge and NIHR Cambridge Biomedical Research Centre, Cambridge University Hospitals NHS Foundation Trust, Addenbrooke's Hospital. Cambridge, United Kingdom. [2]2. NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation at the University of Cambridge, Cambridge, United Kingdom

Introduction: Kidney transplantation (KT) is the optimal treatment for patients with end-stage renal failure however, early detection and treatment of graft injury remains a challenge. Extracellular vesicles (EVs) are lipid bilayer-delimited particles with unique biosignatures and immunogenic potential, functioning as intermediaries of cell signalling. This review examined the role and efficacy of EVs as biomarkers and therapeutics in KT studies.

Methods: Embase, MEDLINE, Web of Science, and Google Scholar were searched (August 2020) to identify studies investigating the application of EVs in KT. All reporting fulfilled PRISMA guidelines.

Results: Of 2,515 retrieved citations, 127 studies underwent full review, and 25 studies (22 Biomarker; 3 Therapeutic) met inclusion criteria. EV markers demonstrated to significantly ($P<0.05$) correlate with transplant pathology included: CD9, CD63 and CD81 (tetrasplanin EV markers; n=5; acute rejection, delayed graft function); IL-6 and IL-18 mRNA expression (inflammatory signalling genes; n=3; graft function, antibody mediated rejection); NGAL (marker of nephron epithelial damage; n=2; graft function). In addition, miRNA sequencing transcripts (n=5) and proteomic analyses with bioinformatic strategies (n=2) correlated with graft outcome. Animal models demonstrated improved graft survival and suppressed inflammation with administration of immature dendritic (n=1), regulatory T cell (n=1), and mesenchymal stromal cell (n=1) derived EVs.

Discussion: This study suggests promising but heterogenous evidence for EVs as biomarkers in KT recipients. Multimodal characterisation of EVs in this population is required to refine and validate suitable molecular markers. EVs represent an exciting modality of non-invasive monitoring and a potential future avenue of therapy in KT to enhance graft survival.

P48

Characteristics of a renal transplant population according to age, comorbidities and frailty

Dr Hannah Gerretsen, Miss Hannah Maple, Dr Jugdeep Dhesi, Dr Elham Asgari

Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: Frailty is associated with increased postoperative mortality in kidney transplant recipients. However, there is a subgroup of frail patients who improve following transplantation. We aimed to examine the relationship between age, frailty and comorbidities with post-operative complications and length of stay (LOS).

Methods*:* We conducted a retrospective analysis of all kidney transplants at GSTT from 2018 to 2019, examining pre-operative and post-operative characteristics. Data collected included documentation of frailty status, comorbidities, post-operative complications at 6 months and LOS.

Results: Data for 483 patients who received a kidney transplant were examined. The mean age was 51.8 years. Data was analysed according to age below 60 (n=328, mean age 44.7 years) and 60 years and older (n=155, mean age 66.8 years). Frailty scores were not recorded in either group. Nor was the presence of cognitive impairment. Ischaemic heart disease (15.5% vs 8.2%, p=0.015) and diabetes (27.7% vs 14%, p<0.001) were more prevalent in the older age group.

Older people had more post-operative complications (47.1% vs 32.3%, p=0.002), with more cardiac events (13.6% vs 4.3%, p<0.001) and urinary retention (4.5% vs 0.9%, p=0.009), as shown in Table 1. The median LOS was longer for older people (7 vs 6 days, p<0.001). A preliminary regression analysis revealed that age is a predictor of complications and complications is a predictor of LOS.

Discussion: We found that age is associated with increased post-operative complications and a longer median LOS. Despite frailty being a recognised marker of poor outcome, frailty is not routinely recorded as part of pre-transplant workup. Therefore we want to implement a new approach to pre-operative assessment, including documentation of frailty.

Post-op complication	< 60 years old		≥ 60 years old		P value
	No (%)	Yes (%)	No (%)	Yes (%)	
Pneumonia	316 (96.3)	12 (3.7)	144 (92.9)	11 (7.1)	0.098
UTI	298 (90.8)	30 (9.2)	139 (89.7)	16 (10.3)	0.681
Wound infection	313 (95.4)	15 (4.6)	146 (94.2)	9 (5.8)	0.560
Perinephric collection	301 (91.8)	27 (8.2)	142 (91.6)	13 (8.4)	0.954
Post-op bleeding	300 (91.5)	28 (8.5)	140 (90.3)	15 (9.7)	0.681
Cardiac event	314 (95.7)	14 (4.3)	134 (86.4)	21 (13.6)	<0.001
Post-op delirium	324 (98.8)	4 (1.2)	150 (96.8)	5 (3.2)	0.128
BPH/retention	325 (99.1)	3 (0.9)	148 (95.5)	7 (4.5)	0.009
Bowel obstruction	328 (100)	0 (0)	153 (98.7)	2 (1.3)	0.039
Any complication	222 (67.7)	106 (32.3)	82 (52.9)	73 (47.1)	0.002

Table 1. Post-operative complications split by age groups.

P49

Delayed graft function post renal transplantation: urine collection can be the culprit!

Dr Panoraia Papadopoulou[1,2], Dr Ingi Elsayed[1], Mr Ajay Kumar Sharma[3], Associate Professor Ahmed Halawa[3]

[1]Department of Nephrology, Royal Stoke University Hospital, UHNM NHS Trust, Stoke on Trent, United Kingdom. [2]University of Liverpool, Institute of Learning and Teaching, School of Medicine, Liverpool, United Kingdom. [3]Faculty of Health and Science, University of Liverpool, Institute of Learning and Teaching, School of Medicine, Liverpool, United Kingdom

Introduction: Renal transplantation is the optimal treatment for patients with renal failure. Delayed graft function (DGF) due to surgical complications used to be a major worry, however, improvement in techniques minimised this risk to less than 5%. Nevertheless, 2.5-30% of recipients can experience a perirenal collection mainly as a urinary leak or lymphocele, causing DGF. Imaging, alongside with fluid analysis, can lead to early diagnosis, treatment and graft survival.

Case presentation: A 28-year-old recipient noted to have high drain volumes in day 2 and 3 post live related renal transplantation. Fluid was immensely high in creatinine with five times higher K level compared to plasma. Graft function plateaued. Patient was euvolemic and stable otherwise. Imaging revealed severe hydronephrosis with extraperitoneal leak. Haematoma, seroma, abscess and lymphocele excluded and CT urography demonstrated urine extravasation (picture 1).

Outcome: A small urine leak can be successfully managed conservatively in approximately 60% of patients, with maximal release of tension and urine diversion, to allow healing of the leaking. In the index case, high volume urine extravasation will need surgical intervention and restoration of the ureteric continuity (table 2).

Discussion: Urinary leak presents the most common urological complication in early post transplantation period and can result in DGF due to mechanical issues, hypovolemia and sepsis. Biochemical analysis of fluid and comparison to serum is essential to differentiate from lymphocele, hematoma or abscess. Imaging is a key point to confirm, diagnose collection and determine severity and location. Organ harvesting should be meticulous to avoid damaging ureter and vessels. Implantation should be tension free. DJ stenting has been promising in reducing incidence of urine leak, therefore, it should be routinely used and removed 6 weeks postoperatively.

Picture 1:

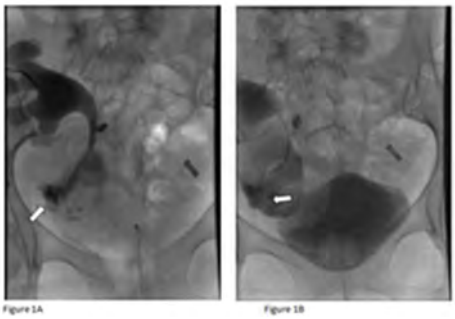


Figure 1A Figure 1B

Table 2 - Management of Urinary Leak

Conservative	Surgical
Small leak	Large or resistant leak
Foley catheter in place	Distal ureter resection and re-implantation
DJ stent is situ	Necrotic ureter resection and use of native ureter for the anastomosis
Nephrostomy creation	

P50

Acute Human Parvovirus infection with refractory anaemia and neutropenia after kidney transplantation

Dr Samar Qaisera Bukhari[1], Dr Luke Hunt[2], Dr Jack Goddard[3], Dr Yazin Marie[1], Dr Anja Oklopcic[1], Dr Ahmed Halawa[1], Dr Josh Wright[3], Dr Mohammad Raza[2], Dr Ali Al-Omari[4], Dr William McKane[1]

[1]Sheffield Kidney Institute, Sheffield Teaching Hospitals, Sheffield, United Kingdom. [2]Virology Department, Sheffield Teaching Hospitals, Sheffield, United Kingdom. [3]Haematology Department, Sheffield Teaching Hospitals, Sheffield, United Kingdom. [4]Histopathology Department, Sheffield Teaching Hospitals, Sheffield, United Kingdom

Introduction: Human Parvovirus B19 (HPVB19) can cause pure red cell aplasia. Persistent viraemia occurs rarely, and in the context of immunosuppression presents as refractory anaemia.

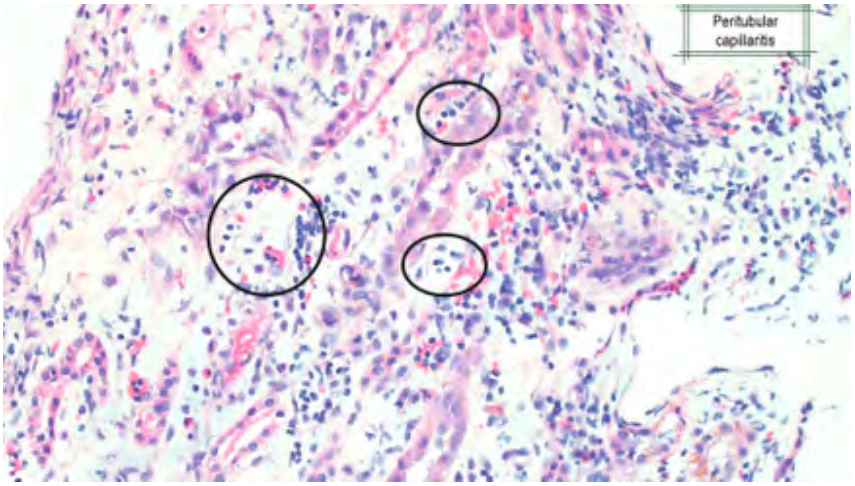
Case Presentation: 38 years, Indo-Asian female received a primary renal transplant (DCD, HLA mismatch 2:1:0, CMV D-/R+, cRF 0%). Immunosuppression was basiliximab, tacrolimus and corticosteroids, prophylaxis with valganciclovir and co-trimoxazole. A biopsy (Day7) for DGF showed severe acute tubular injury, tubulo-interstitial infiltration, no tubulitis, but peritubular capillaritis (Banff ti1/2, t0, C4d0, ptc3, g0) (Figure 1). There was no HLA specific DSA. This was treated with methylprednisolone and mycophenolate mofetil (MMF). Function improved to an eGFR>60ml/min (Day32). She developed post-transplant diabetes. Haemoglobin fell progressively post-operatively in the absence of bleeding, despite ESAs and the improving eGFR, requiring transfusion (4 units in total, over Days49-92)**.** Haematinics, iron studies, haemoglobinopathy, haemolytic and myeloma screens were negative. Blood film showed mild neutropenia, thrombocytosis, reticulocytopenia and no thrombotic microangiopathy**.** Progressive neutropenia (nadir $0.52x10^9$/L) prompted withdrawal of MMF, then valganciclovir and co-trimoxazole without resolution. Immediately prior to a bone marrow examination, high-level HPVB19 viraemia was identified on Day72 (log8.38). Initially, this was managed supportively but rising HPVB19 PCR (log10.01) prompted therapy with IVIg (0.4g/kgx5), which resulted in improvement in anaemia, neutropaenia and viral load (Figure 2). HPVB19 serostatus was negative at transplant, but positive before IVIg, suggesting acute infection.

Outcome: Patient is well with a normal haemoglobin and neutrophils, eGFR>60ml/min, off ESA and MMF.

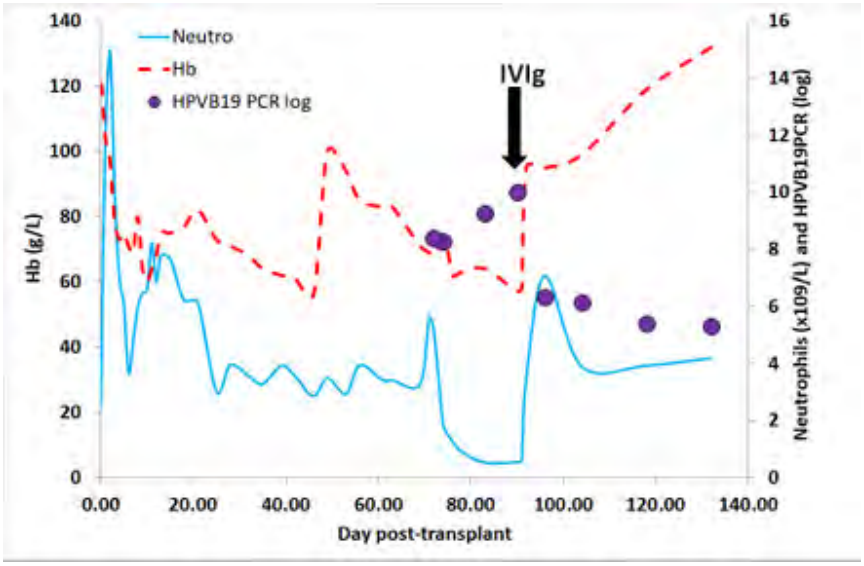
Discussion: HPVB19 is a rare but important cause of post-transplant anaemia. Neutropaenia suggested a marrow cause for her haematological disease, present in up to one third of HPVB19 infections. Parvovirus sometimes improves with supportive therapy and reduction in immunosuppression, but high level viraemia in primary infection requires IVIg, which is NHS approved for short-term use in this indication.

Figure 1: D7 renal transplant biopsy

Figure 2: Co-relation of Hb, Neutrophil count and HPVB19 titres.


Peritubular capillaritis

.


Neutro
Hb
HPVB19 PCR log
IVIg
Hb (g/L)
Neutrophils (x109/L) and HPVB19PCR (log)
Day post-transplant
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00

P51

Resilience - knowing how to cope in spite of setbacks, barriers or limited resources

Staff Nurse Angela Bailey, Sr Julie Gorton, DR Rachel Middleton

Salford Royal Foundation Trust, Manchester, United Kingdom

Never has the NHS faced such challenging times as with the outbreak of COVID 19.

For transplant patients – taking immunosuppressive therapy is a complex aspect of care for this patient group, leaving them vulnerable to certain viruses and illnesses. Now factor in COVID 19. This led to fear, anxiety, physiological, psychological and financial problems. Procedures being cancelled, disruption to the routine of regular blood tests and face to face appointments with consultants and the nursing team cancelled.

For NHS employees – During the past months, we have shown how resilient staff can be when faced with the unknown - COVID 19. Having to manage 800 + transplant patients during lock down, from patients shielding through to returning to work. It required pulling together, discussing options within the MDT how ,to care for our patient group outside of the hospital. As a team we talked to each other, listened, supported each other, worked longer hours. We were tired, worried about our own health, our families and our colleagues. Despite all these concerns still present, we continue to carry on in this vein.

A plan was put in place very quickly to ensure the best possible care was and still is available for our patients.

- Telephone consultations with either a Consultant, registrar or specialist nurses
- Blood/urine tests, weight, B/P, temp, arranged at weekend and early morning, off site to reduce the risk of any infection.
- Staff wiling to cover a 7 day week service as opposed to 5 days.
- Staff have been supplied with lap tops to enable working from home were possible to further reduce the risk amongst staff.
- MDT meetings on teams.
  Electronic diary-all staff have access to whether working from home or in house.

P52

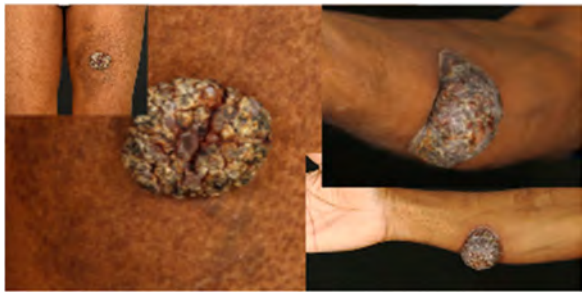
Alternaria alternata phaeohyphomycosis post renal transplant masquerading as cutaneous tumour

Miss Laura Clementoni, Dr Christopher Seet, Mr Ismail Mohamed, Dr Raj Thuraisingham, Dr Caoimhe Nicfhogartaigh, Dr Catherine Harwood, Mr Muhammad Khurram

Royal London Hospital, London, United Kingdom

Introduction: *Alternaria alternata* is a common saprophyte found in nature, rarely affecting immunocompetent humans but may cause opportunistic cutaneous infection in immunosuppressed hosts. Here we present a patient with tumorous lesions rarely seen with this fungal infection.

Case presentation: A 61-year-old man from Nigeria, presented 3-months post deceased donor kidney transplantation. Induction was with interleukin-2 antagonist and immunosuppression included tacrolimus, mycophenolate and prednisolone. He had a 5-month history of slowly growing, tender, verrucous nodules on the left thigh and right forearm with bleeding and purulent discharge. Initially treatment was with flucloxacillin for presumed bacterial abscesses. Possible skin malignancy was considered, and an MRI demonstrated features of possible inflammatory or neoplastic aetiologies. The thigh lesion was excised, and the arm was biopsied and cultured (fungal and atypical mycobacterial). Both lesions revealed extensive mixed suppurative and non-necrotising granulomatous inflammation. Multinucleate giant cells containing intracytoplasmic spherical organisms with relatively thick refractile walls highlighted by Grocott's and PAS stains as round to oval yeast-like forms. Several septate hyphae were also identified. Mycology culture was positive after 5 days incubation and A. alternata was identified by 18S PCR, confirmed by the Mycology Reference Laboratory.



Results: After multidisciplinary discussions (dermatology, microbiology, histopathology, plastic surgery and transplantation), the patient was started on Itraconazole 400mg BD, later reduced to 200mg BD with target levels 1-4 mg/L. After 3 months treatment, the lesion on the thigh healed and arm lesion was flatter. Itraconazole was well tolerated but required significant reduction of tacrolimus dose. The graft function remained stable throughout (median creatinine serum 121umol/L).

Discussion: *A. alternata* infection can be challenging to diagnose and can masquerade as malignancy. Skin biopsy for histopathology and culture for accurate fungal identification is essential. Antifungal agents are the mainstay of treatment with careful monitoring of the immunosuppression. Treatment of this opportunistic infection is prolonged and requires a multidisciplinary approach.

P53

Improving patient safety in transplant surgery: do checklists help or hinder?

Miss Emma Howie, Miss Emma Aitken

Queen Elizabeth University Hospital, Glasgow, United Kingdom

Introduction: Improving patient safety is an important priority for surgeons. The World Health Organisation introduced their Surgical Safety Checklist in 2008 as part of the "Safe Surgery Saves Lives" campaign. Checklists are common place in industries involving high-complexity tasks performed by humans and are useful as a prompt in high-risk situations as a safety mechanism in the event of human error. A national qualitative study was undertaken to evaluate the implementation and perception of transplant specific surgical checklists and briefs across the UK.

Methods: A national survey of Renal Transplant surgeons was distributed to evaluate surgical checklists and briefs in transplant surgery. This consisted of a 5 minute online survey via Webpropol.

Results: 15 of the 24 UK renal transplant centres responded. 52% of centres employed a transplant specific checklist. The majority were completed just prior to knife to skin (48%). 77% of respondents stated surgical checklists are beneficial. 76% of respondents stated that theatre checklists prevented error and Never Events. 72% noted improved patient safety, patient flow and encouraged team-work.

Discussion: The survey demonstrated that the majority of surgeons think that checklists and transplant specific briefs are a useful tool in reducing error and improving patient safety. Surgical checklists reduce post-operative complications and ultimately morbidity and mortality. Error is reduced by promoting communication, team-working and a culture of safety within the surgical team. Potential problems are highlighted and concerns addressed. Transplant surgery is unique in many ways: the implantation of a matched donor organ, anti-rejection medications and patients with co-morbidities associated with chronic kidney disease. The nature of transplantation means that transplants often take place out of hours where nursing or anaesthetic staff may be unfamiliar with transplantation. Checklists guiding the operative team provide an effective contingency plan to avoid error.

P54

Complete digitalisation of post cardiothoracic transplant patients medical records

Miss Irene Cardella, Dr. Jasvir Parmar, Dr. Stephen Pettit, Miss Sarah Claydon, Mrs Adriana Robb, Mrs Sadie Von Joel, Mr Richard Quigley

Royal Papworth Hospital NHS Trust, Cambridge, United Kingdom

Introduction: Due to the COVID-19 pandemic finding solutions to allow staff members to be able to undertake their role without compromising service efficiency and patient safety has become a priority. Office work might seem easily deployable to a "working from home solution", however it has proven harder than initially thought. Working in one of the largest cardiothoracic transplant centers with in excess of 1200 post-transplant patients means we have to deal daily with a multitude of complex and delicate medication regime alterations. To date, we have been unable to find a solution enabling us to do so in a digitalized system, binding us to paper forms.

Case presentation: Therapy management in transplant patients cohorts is fundamental to their life prospects. It is paramount to have a system in place that is reliable, safe and efficient. Currently this is done on paper form so that is physically visible, avoiding loosing important information in communication between doctors, nurses and patients. This has proven a reliable system so far, however it comes with its limitations. First of all, the information is exclusively accessible on site. Furthermore, writing misinterpretations and transcript errors are one of the major cause of errors. Also, in case any information gets lost, this cannot be retrieved in any form. The COVID-19 pandemic has only pushed further the need for a digitalised system that allows accessibility of information, avoidance of basic errors and a backup system to rely on.

Outcome: We are currently developing a digital system, with the objective of introducing a more versatile, effective, safe and reliable system. This will be trialed in the second quarter of 2021.

Discussion: Despite previous failed attempts we are confident we have found the way forward to move away from paper-form patients folder to a system that safely maintains the flexibility required during these difficult times.

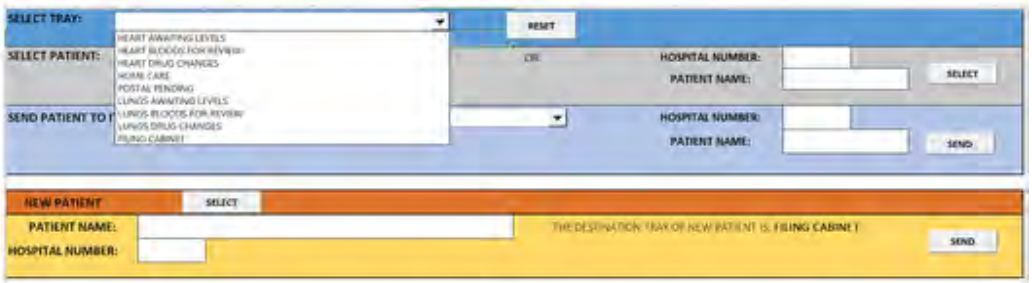


Fig. 1 - Control system for movement of virtual patient folders across different management trays

P55

The donor family volunteer role - the future?

Mr Stephen Regan[1], Revd Carolyn Castle[2], Mrs Odette Ward[3]

[1]Specialist Nurse-Organ Donation, NHS Blood and Transplant, Merthyr Tydfil, United Kingdom. [2]Lead Chaplain, Cwm Taf Morgannwg UHB, Merthyr Tydfil, United Kingdom. [3]Donor Family Volunteer, Cwm Taf Morgannwg UHB, Merthyr Tydfil, United Kingdom

Introduction: This case study focuses on the feedback received from an organ donor's wife on her experience during the donation process.

Case presentation: The donor's wife has since explained how lonely she felt during the donation process following the consent conversation. She feels very strongly that she would have benefited greatly from having someone to accompany her to provide emotional support during this time when the Specialist Nurse-Organ Donation (SNOD) was busy performing other duties relating to the donation process.

Outcome: As a result of this feedback, in collaboration between the donor's wife, the chaplaincy service at the donation hospital, and the SNOD, the role of Donor Family Volunteer was created. The first volunteer is the donor's wife who has also become a member of the Health Board's Organ Donation Committee.

Discussion: This particular case highlights the need for an individual who can provide important emotional and spiritual support to donor family members who find themselves in a similar situation at this traumatic time. Even the smallest of gestures, such as sitting at the bedside to allow family members to take a break without the guilt of leaving their loved ones can be of great benefit and improve the donation experience as a whole. The role of the SNOD is a very demanding one, and often due to the huge workload involved in facilitating a donor, the ability to provide adequate emotional support to the donor family can be limited. The support of the Chaplaincy Service has proved to be vital in such scenarios, and many chaplains have received positive feedback for their role during the donation process. Hopefully, this new role will give families the emotional support and holistic care they need and ultimately improve the donor family experience in the future.

P56

Improving decision making around living kidney donation (DEAL-KD) within Black, Asian and minority ethnic communities: a study protocol

Ahmed Ahmed[1], Anna Winterbottom[1], Shenaz Ahmed[2], John Stoves[3], Sunil Daga[1]

[1]Leeds Teaching Hospitals Trust, Leeds, United Kingdom. [2]University of Leeds, Leeds, United Kingdom. [3]Bradford Teaching Hospitals NHS Foundation Trust, Bradford, United Kingdom

Introduction: Living donor kidney transplantation is the optimal renal replacement modality for people with advanced kidney disease. Considerable inequalities exist in terms of prevalence and access to treatment. Black, Asian and Minority Ethnic (BAME) groups are three-five times more likely to require dialysis and wait longer than people from Caucasian backgrounds for a transplant. Decision making around Living donor kidney transplantation is complex, requiring communication between health professionals and recipients and recipients with potential donors. Kidney services support patients making these decisions by providing written information to supplement clinical encounters. Existing information is often not developed with consideration of health literacy issues or produced in a culturally sensitive way. Providing good quality information is a modifiable factor which may encourage people to donate a kidney. Patient decision aids are resources designed to support people making decisions by drawing on evidence of how to help people deliberate about treatment information in accordance with their personal circumstances. Using stakeholder views of how to best support people to make decisions about living kidney donation, we will develop an evidence-based patient decision aid for use within kidney services to increase uptake of living kidney donation amongst people from BAME backgrounds

Methods: This two-year project is funded by Kidney Research Yorkshire (ref: KRY 19-127) and commenced in November 2020. Studies will be completed across renal centres in West Yorkshire. Applications for HRA/REC and NIHR Clinical Research Network approval are underway. Studies will include mixed methodology a) Questionnaire of people during/after transplantation process to elicit views on facilitators and barriers to conversations around living kidney donation (N=150) b) identifying service needs via interviews with staff and a series of observations of current clinical practice, c) drafting and initial piloting of decision aid. Protocol will be submitted to a peer reviewed publication in January 2021

P57

Scouting – does it work? A case study

Mrs Jen Baxter, Mr Marius Berman, Mr Richard Quigley, Mr Pradeep Kaul, Dr Antonio Rubino

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Last year more than 350 people died in the UK whilst waiting for a solid organ transplant highlighting the shortage of donor organs and the need to improve donor organ utilisation. Donor optimisation, known as 'Scouting' is a way to optimise donor organ function and increase the utilisation of organs deemed marginal or non-transplantable. The following case study evidences the benefits of a Scout attendance in ITU and the subsequent acceptance and successful transplantation of heart and lungs by two different cardiothoracic centres.

Case presentation: Scout attended a 56yrs female with high inotropic requirements (Norad >0.2mcgs/kg^{-1}/min^{-1}) and long standing hypertension taking a single agent. The donor also had a low PaO2/FiO2 ratio (24). A pulmonary artery catheter was inserted by the Scout to asses preload and afterload of the heart. The information gained allowed optimisation to improve cardiac performance to take place. Inotropes were successfully weaned off. Improved cardiac function was confirmed on transoesophageal echocardiography (TOE). Fibre optic Bronchoscopy and lung recruitment was used to successfully optimise lung function.

Results: TOE undertaken demonstrated a left ventricular ejection fraction of 65%. Post optimisation cardiac output studies were; CO 6.4, CI 3.3, PCWP 9, CVP 8, SVR 731 with no inotropic support. Arterial blood gas analysis showed a significant improvement in PaO2/Fio2 ratio from 24 to 38 following optimisation. This improvement in function resulted in a full NORS team being mobilised and successful use of accepted heart and lungs.

Conclusion: Two patients were successfully transplanted with excellent immediate post-transplant allograft function. This case study evidences the effects of a scouting episode and how this can increase organ utilisation in the UK. We recommend that a formalised national scouting programme should be commissioned for in-situ optimisation of marginal donor organs. This will help in increasing the much needed donor organ pool for Heart and Lung transplantation.

P58

Understanding the potential for tissue donation in hospital settings

Mr. Pedro Silva

NHSBT, London, United Kingdom

Introduction: In recent years there was an enormous progress in the usage of human tissue for therapeutic purposes, which led to a considerable increase of tissue donors demand. However, in UK the number of tissue donors did not follow this trend and it also correlates with a low hospital referrals of tissue donors. The fact that tissue donation is not timely urgency and the tissues are stored, in hospital environment there is in theory a big pole of potential tissue donors. The present study aims to understand the potential for tissue donation in hospital settings.

Methods: A retrospective audit was conducted on all the patients who died within the hospital over one year. The electronic records were audited for the presence of any absolute contraindication (ACI) for tissue donation. The Organ Donor Register (ODR) was also consulted.

Results: The audit recorded 891 deaths in all the departments. From those, 435 patients did not have any ACI for tissue donation (49%). One hundred and twenty-four patients registered their decision as OPT-IN on ODR and 57 of those patients were also not identified with any ACI for tissue donation (46%). During this period 9 patients were referred as potential tissue donors.

Discussion: While organ donation is life-saving, tissue donation can still play a crucial role on patient's quality of life. This study shows that almost half of the patients audited were potential tissue donors and a significant part of those patients were registered as OPT-IN on ODR. Nevertheless, this hospital had a very small number of patients referred as potential tissue donors. Even though there is a huge effort to offer the possibility of solid organ donation to all the potential donors, seems that the same does not occur in regards to potential tissue donors. Strategies to raise awareness and education about tissue donation were proposed.

P59

PTLD remains a significant cause of death with a functioning graft in renal transplant patients: a single centre audit in a district general hospital

Dr Mahdi El Harbe, Dr Brian Camilleri, Dr Po-Yee Tang

Ipswich hospital, Ipswich, United Kingdom

Introduction: Although national registries capture data on the causes of renal graft loss, the information is usually not granular enough to allow detailed analysis of the specific causes within individual centres. A review of all-cause graft loss in renal transplant patients was conducted for patients attending a transplant follow-up clinic between 2013-2019 in a district general hospital.

Methods: Data was collected from a register maintained by our local department, and it included patients who were deceased, returned to dialysis, or underwent pre-emptive second transplant.

Results: 66 patients lost their renal graft over the course of seven years. The median duration of follow up was 114 months (9.5 years). The mean age of patients who lost their renal transplant was 57 years of age (range 24 – 82 years). The most common cause of renal graft loss was death with a functioning graft (59%). The leading cause of deaths were related to malignancies (43%), infections (18%) and cardiovascular mortality (13%). The breakdown of malignancy associated deaths by site were haematological (41.2%), Unknown primary (23.5%), Upper GI (17.6%), Dermatological (11.8%) and neuroendocrine (5.9%).

Discussion: Our data was compared with the UK Renal Registry and NHS Blood and Transplant (Burton et al. (2019)), and with data derived from Hospital Episode Statistics and Office for National Statistics (Farrugia et al. (2014)). The median follow-up and cardiovascular mortality were better in our unit, however, death from malignancies, especially from a haematological site, had an incidence that was twice as high. Reduction of immunosuppression may reduce this risk. Although national registries provide an overview of outcomes of transplantation, individual units should review their own data to highlight any local issues that may require a change in practice.

P60

Raising the pressure: renal vein thrombosis and post-operative hypotension is there an association?

Miss Joanna Aldoori, Dr Camilla Davies, Mr Ahmed Ghoneima, Miss Sonsoles Martinez-Lopez

St James's University Hospital, Leeds, United Kingdom

Introduction: Renal vein thrombosis (RVT) is a disastrous complication of renal transplantation, with an incidence of 0.1 – 4.2%. Recognised factors associated with RVT include surgical technique and thrombophilia among others. Post-operative hypotension may contribute to RVT due to venous stasis. We aimed to assess whether post-operative hypotension is associated with RVT.

Methods: A case-control study was undertaken in a single centre. Cases were identified from a prospectively managed database from January 2015 to January 2020. Controls were matched for age, sex and donor characteristics including: type of donor, donor age, donor gender and ischaemia times. Hypotension was defined as a systolic blood pressure (BP) of ≤90mmgH. BP was recorded pre-operatively and at 4-hour intervals thereafter. Data was retrieved retrospectively from case notes and electronic patient records. The missing data rate was reported.

Results: 12 patients experienced RVT during the 5-year study period. The mean age of recipients was 44.3 years (20 – 73 years) of which 7 out of 12 (58%) were male. The overall incidence of RVT within the study period was 1.11%. All patients underwent a transplant nephrectomy except for one who was treated with anticoagulation. There was missing data for 3 out of 12 patients in both groups with a missing data rate of 25%. 3 out of 12 patients had hypotension with a systolic BP of <90mmHg in the RVT group compared to 1 out of 12 patients in the control group, OR 3.6 (P=0.29) (95% CI, 0.32 – 41.59).

Discussion: Within the limitations of this matched case-control study it is possible that RVT is associated with hypotension. Although the incidence of RVT is small, it represents a significant consequence of transplantation and therefore it may be necessary to closely manage post-operative BP to avoid RVT. Future multicentre studies may contribute further understanding to the relationship between post-operative hypotension and RVT.

P61

Duplex ureters: what are the long-term implications after transplantation?

Mr Charles Hill[1], Dr Fernando Yuen Chang[2], Mr Reza Motallebzadeh[2], Mr Ammar Al Midani[2], Mr Colin Forman[2], Mr Neal Banga[2], Mr Bimbi Fernando[2], Ms Fiona McCaig[2], Mr Mohammad Hossain[2]

[1]UCL Medical School, London, United Kingdom. [2]Royal Free London NHS Foundation Trust, London, United Kingdom

Introduction: Kidneys with duplex ureters are one of the most common congenital genitourinary anomalies, with an incidence of 0.8%[1]. Implanting such a kidney can be technically challenging and may impact on short and long-term outcomes. It is unknown whether polar vessel ligation impacts on ureteric complications. In our hospital, 1315 patients received kidney transplants between April 2009 and November 2020, of which 9 (0.6%) received a duplex ureter kidney. Here we report our single centre experience in duplex ureters and their clinical outcomes.

Methods: We evaluated the length of stay, ureteric post-operative complications and readmissions, and graft function with eGFR up to one year. In addition, we examined whether the polar arteries (if present) were anastomosed and what kind of ureterovesical anastomosis was performed. We identified a control group matching for recipient factors, time of operation (month) and the surgeon performing the operation.

Results: Between April 2009 and November 2020, 9 patients received a duplex ureter kidney. In this group the average age was 50.0, 5:4 male:female ratio. The average length of stay was 10.1 days (mode = 5). One patient with multiple pelvic comorbidities experienced 2 re-operations and 1 procedure. Three patients stayed longer than 6 days; one stayed for 32 days due to unrelated post-operative complications. In the control population (9) the average age was 53.2 with a 3:2 male:female ratio. The average length of stay was 28.1 days (mode = 5), with no readmissions. Six patients stayed longer than 6 days; one stayed for 190 days due to unrelated vascular complications.

Conclusion: Our case series highlight that there is no difference in clinical outcomes between single and duplex ureter and should not be a factor for organ decline. However, duplex ureters do pose technical challenges that must be taken into account pre-operatively and implant options should be considered with recipient factors.

P62

The importance of effective leadership - managing a deceased donation service in Northern Ireland during the 1st surge of a Covid pandemic

Ms Nikki Murray, Mrs Monica Hackett

NHSBT, Belfast, United Kingdom

Introduction: The Northern Ireland Organ Donation Team (NIODST) of SNODs, SRs and two Team Managers covering 5 Trusts across the region. During the first peak of the COVID pandemic, despite the impact on local hospitals and our staff, in managing personal and professional challenges, the team successfully sustained and increased donation rates and impacted positively on local Transplantation.

Case presentation: Effective leadership of the team throughout the challenges of the pandemic was essential to maintain trust engagement and sustain a high performing team.
Challenges: Visibility –The focus was on increasing visibility as a leader without increasing risk. The development of new communication channels was vital.
Stakeholder engagement – to continue our well-established secure relationships with clinical colleagues and the wider collaborative and acknowledging partnership working through recognition certificates.
Control and choice - in ways of working. Negotiating possible re-deployment, meeting needs of clinical areas with provision of flexible working to address childcare and health and wellbeing needs whilst maintaining an operational rota for service provision.
Practical solutions - adapting environment, provision of software and hardware, IT access from home while reducing risk for vulnerable staff.

Outcomes: Figure 1 demonstrates the increase in activity in comparison to the 2019/20 period, despite the reduced availability of team members due to shielding and vulnerable working from home.

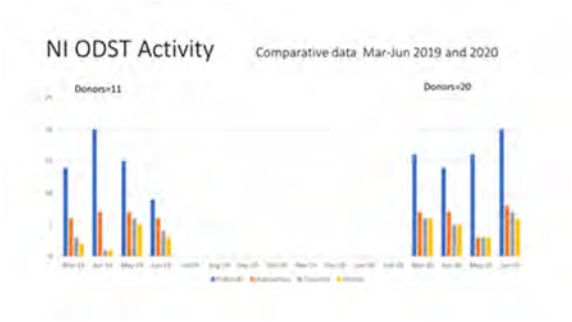


Figure 1

· Increased feelings of achievement and pride expressed by the team through formal reflection and staff engagement surveys.

Discussion: Flexible and compassionate leadership supported the team to perform effectively and maintain service delivery and organs for transplant. This has prepared us for the '2nd surge'. A firm foundation to build upon, being cautious but not complacent - seeking to maintaining relationships and effective methods of communications that support and balance the team and individual needs.

P63

Research utilisation of non-clinical organs

Mrs Clare Denison[1], Ms Liz Armstrong[2], Ms Hannah Tolley[3], Ms Margaret Stevens[4]

[1]NHSBT, London, United Kingdom. [2]NHSBT, Birmingham, United Kingdom. [3]NHSBT, Cambridge, United Kingdom. [4]NHSBT, Basildon, United Kingdom

Introduction: With the donor family's consent or authorisation, un-transplantable organs can be offered to approved research studies through a national allocation scheme.

Methods: NHSBT's ODT Research team are copied into all research organ offers and keep track of these organs' fates.

Results: During the 2019/20 financial year, 784 un-transplantable organs were offered for research. The vast majority of these (97%) were abdominal organs. Acceptance rates vary greatly for each organ type, from 33 – 86%.

Discussion: Acceptance rates are dependent on many factors including cold ischaemic time, the reason why the organ has been deemed un-transplantable, research restrictions and the time that the research offer is made. A project due to go live in early 2021 will increase the number of cardiothoracic organs available for research, as well as making diabetic pancreases available to researchers for the first time.

P64

Patient education – updating information for heart and lung transplant patients

Monika Krupa, Richard Quigley, Sadie Von Joel

Royal Papworth Hospital NHS Foundation Trust, Cambridge, United Kingdom

Introduction: Post heart or lung transplant recovery and long term outcomes depend on multiple factors amongst which patients' education plays an important role. Some currently available information collated in collaboration between six UK transplant centres was becoming outdated. A Cardiothoracic Transplant Centre planned to undertake a review of the booklet, but this was paused due to COVID-19 (SARS-CoV-2) pandemic. However, during the pandemic transplant specialist nurses were redeployed and shortfall in patient education was noticed due to displaced workforce. Therefore, an acute update was undertaken within a short time frame. The aim was to incorporate most recent evidence influencing local practice only.

Methods: The booklet was divided into pre-transplant and post-transplant sections. Pre-transplant part was reviewed by the transplant co-ordinators. Post-transplant sections were disseminated to specific allied healthcare professionals (pharmacist, physiotherapist, dietitian, ward nurses). Afterwards, a draft was sent to the transplant consultants for review.

Results: Several changes were made in the pre-transplant part incorporating local practice with pre-transplant referrals, assessment clinics and ever changing specific transplant information, such as organ donors choices. Also, some changes were necessary in the post-transplant section. Only evidence-based changes were accepted.

Discussion: Despite pandemic driver for an acute update general consensus within local team was achieved. However, several questions arose from comprehensive discussions within the multidisciplinary team. Amongst them, lack of robust evidence for current dietary recommendations in transplant patients group was highlighted. This raised ethical implications of deviating locally from nationally accepted dietary advice. Conclusively, contemporary advice ratified by the MDT was developed. Nonetheless, a service improvement project in collaboration with other centres and transplant patients would be recommended in the future.

Acknowledgement: to all members of the transplant multidisciplinary team for their contribution in this project.

P65

NHS Blood and Transplant - cost recovery of organs and tissues for non-clinical use

Mrs Clare Denison[1], Ms Victoria Abraham[1], Ms Hannah Tolley[2], Prof Paul Rooney[3], Ms Agatha Joseph[3]

[1]NHSBT, London, United Kingdom. [2]NHSBT, Cambridge, United Kingdom. [3]NHSBT, Liverpool, United Kingdom

Introduction: The Organ and Tissue, Donation and Transplantation (OTDT) directorate supports innovation and research initiatives through the provision of organs and tissues for non-clinical use. The OTDT Innovation and Research team work alongside researchers to progress their OTDT application and gain approval for supply, completing activities from risk assessments to establishing training plans. This requires significant resourcing, incurring costs to OTDT. It is proposed that prospective researchers are charged to cover the cost of the OTDT application process, any training or awareness raising related to their study and a partial cost recovery amount for the service of provision of each organ or tissue.

Methods: An options appraisal is being undertaken to consider pricing strategies and approaches for cost recovery. The previously separate organ and tissue application processes have been redesigned into a single OTDT research application process, providing simplicity for prospective researchers.

Results: Tissue and Eye Services (TES) have commenced partial cost recovery for the provision of tissues, recovering approximately £50k in 2019/20. There is no cost recovery in place for the provision of organs, or for the OTDT application process. This initiative seeks to align the processes and cost recovery of organs and tissues, following the joining of Organ Donation and Transplantation (ODT) and TES under the OTDT directorate.

Discussion: Any implementation of further cost recovery will use the lessens leaned from TES by providing an appropriate notice period and phased implementation plan. This is to ensure researchers have time to plan and work the cost recovery charge into their funding applications.

P66

Shorter waiting times post introduction of Transplant Benefit Score (TBS) in the current National Liver Offering Scheme (NLOS) increases the risk of recidivism in patients undergoing Liver Transplantation (LT) for Alcohol Related Liver Disease (ARLD)

Dr Agimol Pradeep, Ms Shirin Khorsandi, Mr Andreas Prachalis, Mr Ian Webzell, Mr Krishna Menon, Dr Abid Suddle, Dr Varuna Aluvihare, Ms Racquel Beckford, Ms Wendy Littlejohn

Kings College Hospital, London, United Kingdom

Introduction: NLOS was introduced in March 2018 and is based upon the TBS aimed to match donor and recipient characteristics to achieve best outcomes. At present only Donation after Brain Death (DBD) livers are allocated using the TBS to adult recipients. This study aims to investigate the effect of the TBS in the current NLOS on liver transplantation in ARLD.

Methods: This was a retrospective single centre study comparing the two time periods of pre TBS (April 2016 – March 2018) and post TBS (April 2018 – March 2020) in patients undergoing LT for ARLD. Data were extracted from a prospectively maintained liver transplant database. A search was performed using ARLD as the primary chronic liver disease diagnosis and further filtered based on DBD allocation. Data are expressed as median and range. The endpoints of the study were waiting time on the list and recidivism post-transplant.

Results: N=43 patients underwent LT for ARLD in the pre TBS era and 75 in the post TBS era. Median wait time pre TBS was 118 (4 - 1021) days and the post TBS median wait time was 23.5 (1-1011) days. With regards to recidivism, data collected on post TBS era only and was available on recipients (n=52) being followed up locally. Of this cohort, there were 8 recidivists and their median wait time was 8.5 (5-176) days

Conclusion: The TBS in the current NLOS has resulted in a shorter wait time for recipients with ARLD in our centre that is potentially influencing the occurrence of recidivism post transplant.

P67

Listing of unacceptable HLA-DP antibodies for deceased donor transplantation

Mrs Catherine Cormack, Mrs Deborah Prichard, Miss Emma Burrows, Mrs Sandra Lloyd, Dr Tracey Rees

Welsh Transplant and Immunogenetics Laboratory, Welsh Blood Service, Cardiff, United Kingdom

Introduction: HLA-DP was included in deceased donor kidney allocation from August 2019. Centres require an unacceptable antigen (UA) listing policy for DP antibodies detected in waiting-list recipients. We list HLA antibodies at an MFI level expected to result in a positive flow cytometry crossmatch (FCXM) (2-3000 MFI for HLA-A, B, DR). Previous experience with DP antibodies shows a higher MFI is necessary for a positive FCXM. The aim of this study was to determine an appropriate DP MFI level for UA listing.

Methods: Kidney patients with DPB antibodies were identified from routine testing using LABScreen Single Antigen Beads (SAB). 76 sera, from 16 patients were tested in 24 'third-party' FCXM. DPB antibodies ranged from 1130 – 28879 MFI. Careful selection of 'donor' cells excluded non-DPB donor specific antibodies (DSA) and multiple DPB DSA in heterozygote donors. A positive FCXM was a linear channel shift (LCS) >40.

Results: 26/76 (34.2 %) sera with DPB DSA had a negative FCXM, (MFI range 1130 - 19589 median 5342); 51 had a positive FCXM (MFI range 2193 – 28879 median 15,536) (Figure 1). 10000 MFI was identified as a DPB UA listing threshold: <10000 MFI, 5 'false positives', >10000 2 'false negatives' (sensitivity 90.2%, specificity 92.3%).

Discussion: A single MFI threshold for UA listing cannot be applied to all HLA loci. DPB antibodies 2000-10000 MFI often result in a negative FCXM. Our implemented 10000 MFI threshold for DPB listing excludes patients from unsuitable donor offers, while allowing patients with DPB antibodies (who are often highly sensitised) to have a FCXM performed for full immunological risk assessment. UA listing from Luminex SAB results is complex: DPB antibodies are often formed against epitopes present on several DPB alleles. This can result in lower MFI values as antibody reactivity is 'spread' over multiple SAB. This may explain the 5 positive FCXM seen with MFI <10000 MFI.

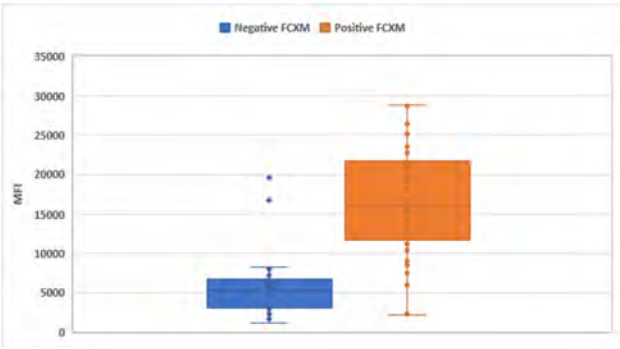


Figure 1: Flow Cytometry Crossmatch (FCXM) results of 76 sera with DPB donor specific antibodies. A linear channel shift >40 is used to define a positive FCXM.

P68

Becoming a SNOD without critical care background - a personal perspective

Ms Mary Hayes

NHSBT, Belfast, United Kingdom

Introduction: Traditionally Specialist Nurses Organ Donation (SNOD) came from a critical care background. It was a specific requirement of the job description to have worked in either ITU or ED. This precluded many nurses from applying to become SNODs. This changed in 2019 (Cohort 11) when nurses without ICU or ED experience could to apply to become SNODs. It was this change in the recruitment policy that enabled me to apply for the role of SNOD. I was successful at interview and joined Cohort 12 in November 2019.

Case presentation: To ensure trainee SNODs developed knowledge and skills required to care for the donor patient in ITU, the Professional Development Specialist team devised a Critical Care Module(CCM). The teaching was classroom based over a 3 day period and delivered to a small group of 6 trainees. The advantage of a small group was that the learning could be targeted to our individual needs, it was a relaxed and friendly environment. Once classroom based training completed this was backed up with practical training by spending 3 weeks working alongside an experienced nurse on an Intensive Care Unit. In addition the trainee SNOD was allocated a mentor who could assist the trainee to achieve the required competencies.

Outcome: The introduction of this course allows more flexibility in recruitment, allowing nurses with different experiences and clinical backgrounds to become SNODs, thus increasing knowledge within the teams. The object of the CCM course was to ensure the SNOD had the skills to work with donor in an ITU setting. I personally felt the training fulfilled that requirement.

Discussion: Limited or no critical care background is not a barrier to becoming a SNOD. The training provided is excellent. I would encourage any nurse to consider becoming a SNOD.

P69

Pulmonary artery catheter utilisation on organ donor retrievals: creating an instruction manual to guide NORS (National Organ Retrieval Service) members on successful assembly and calibration of necessary equipment

Miss Madalina Gusa, Mr Richard Quigley, Mr Pradeep Kaul, Mr Marius Berman, Mrs Jennifer Baxter

Royal Papworth Hospital, Cambridge, United Kingdom

Objectives: One of the fundamental tools used in the evaluation of the heart for retrieval during organ retrieval from donors following brain death (DBD) is Pulmonary Artery Catheter (PAC) alongside Transoesophageal Echo (TOE) and visual inspection. The object of the Pulmonary Artery Catheter is to take haemodynamic measurements to guide assessment, optimisation and decisions on appropriate retrieval. It is the role of the Transplant Practitioners to correctly set up and assemble the equipment and the specific monitoring in order to accurately deliver the required measurements.

Methods: A senior TP from a single- centre cardiothoracic NORS retrieval team identified a need for standardised practice with regards to the assembly and calibration of the required equipment for successful Pulmonary Artery Catheter floatation and interpretation of results. A guide has been created to increase the understanding of the procedure with the aim to increase the accuracy and precision of the assembly amongst the members of the retrieval team.

Results: Following implementation of this guide, the NORS team has thoroughly utilised this improved method, ensuring the guide is followed for all retrievals. On the back of this subsequently, it has been identified that the number of errors and misunderstandings has considerably decreased as the entire NORS team is now following the same standardised format. Informal feedback from trainees and junior members have established that guide has created a better understanding and awareness of the procedure and set-up therefore delivering a higher and more comprehensive standard of service within the NORS team.

Conclusion: Having a protocol in place to assist in maintaining a structured approach to the understanding and set-up of Pulmonary Artery Catheters has improved our service by offering an organised, methodical and reliable format, which has improved staff efficiency, knowledge and understanding in practice

P70

The impact of pre-existing portal vein thrombosis on liver transplant outcomes

Mr Ioannis D. Kostakis, Professor Joerg Matthias Pollok, Mr David Nasralla, Professor Brian R. Davidson, Mr Charles Imber, Mr Dinesh Sharma, Mr Satheesh Iype

Department of HPB Surgery and Liver Transplantation, Royal Free Hospital, Royal Free London NHS Foundation Trust, London, United Kingdom

Introduction: Preexisting portal vein thrombosis (PVT) increases the risk of complications after orthotopic liver transplant (OLT). We investigated this further in our cohort of liver transplant patients.

Methods: Forty-one patients with preexisting PVT underwent OLT from donation after brain death (DBD) (January 2009-May 2019). This cohort was compared with 708 patients without preoperative PVT who underwent DBD OLT during the same period. Donor and recipient characteristics, operative parameters, complications and survival data were collected.

Results: Thirty-four patients had partial PVT and 7 complete PVT. Thrombectomy of portal vein was performed in 26 cases. There were 9 deaths in the PVT group (7 perioperatively). There was a higher risk of haemorrhage in complete PVT (no PVT:8.6%, partial PVT:11.8%, complete PVT:42.9%, p=0.018). There was a gradual increase in the risk of postoperative PVT (no PVT:0.6%, partial PVT:2.9%, complete PVT:14.3%, p=0.014) and hepatic artery thrombosis (HAT) (no PVT:2.8%, partial PVT:8.8%, complete PVT:14.3%, p=0.037) as the grade of preoperative PVT increased. No difference was found regarding postoperative haemodialysis (p=0.213) or primary non-function (p=0.137). Within 3 months after OLT, there was a higher risk of graft loss in complete PVT (no PVT:5.4%, partial PVT:8.8%, complete PVT:28.6%, p=0.045) and a gradual increase in the risk of mortality as the grade of preoperative PVT increased (no PVT:5.4%, partial PVT:11.8%, complete PVT:42.9%, p=0.002). No difference was detected concerning long-term graft (p=0.418) or patient survival (p=0.265). Multivariate analysis showed that complete PVT is a risk factor for early graft loss (OR=8.894,p=0.031), early mortality (OR=24.269,p=0.002) and worse patient survival (HR=3.911,p=0.04), while partial PVT is a risk factor for early mortality (OR=5.599,p=0.011).

Conclusions: Preoperative PVT increases the risk of haemorrhage, postoperative PVT, postoperative HAT, early graft loss and mortality after OLT. Complete PVT is associated with worse outcomes than partial PVT.

P71

Surgical complexity and outcomes of repeat liver transplantation in adulthood following primary pediatric transplantation

Mr Hassaan Bari[1], Ms Hermien Hartog[1], Ms Anisa Nutu[1], Mr Dhakshina Vijayanand[2], Professor Darius Mirza[1], Mr Raj Prasad[2], Mr Thamara Perera[1]

[1]University Hospital Birmingham, Birmingham, United Kingdom. [2]The Leeds Teaching Hospitals, Leeds, United Kingdom

Introduction: As a result of improved outcomes increasing numbers of paediatric liver transplant (LT) recipients are reaching adulthood. Chronic rejection and vascular related complications are common reasons for late allograft failure and warrant repeat LT (re-LT) in a subset of patients. The aim of this study was to review surgical complexity and outcomes of re-LT as an adult after having a primary pediatric LT

Methods: Cases of re-LT in adult patients (aged>=16years), after having undergone LT as a child were identified from the year 2000 to 2020 in the databases of LT centres of Birmingham and Leeds. Recipient characteristics, operative details and outcomes were collated. Graft and patient survival were calculated by Kaplan Meier method

Results: A total of 24 patients were included with a median follow-up after re-LT of 40 months. The median age at primary LT was 5 years (10 months to 16 years) and the most common indication was metabolic liver disease (n=8, 33.3%). The median graft survival of the primary graft was 168 months (24 to 300 months) and chronic rejection was the most common reason of graft failure (n=16, 66.6%). Adult re-LT was performed at a median age of 23 years (16 to 32 years) and median UKELD score at time of re-LT was 61.5 (48 to 68). Vascular reconstructions, as an indicator of surgical complexity were needed in 16 patients (4 caval replacement, 3 portal vein interposition grafts, and 9 aortic conduits). Primary biliary reconstruction and abdominal closure was not possible to complete at the time of the repeat liver transplant procedure in 2 and 4 patients, respectively. Clavien-Dindo grade III complications were recorded in 16 patients (66.7 %), most commonly haemorrhage or bile leak, and ninety-day mortality was 12.5% (n=3). One, three and five year patient and graft survival rates after re-LT were 82.9%, 77.7% and 70.6% and 78.7%, 73.8% and 67.1%, respectively

Discussion: Repeat transplantation in adults who underwent primary pediatric liver transplantation is associated with major surgical complexity, high morbidity and early mortality rates. However, long-term survival can be achieved in >70% of this young population

Table 1 - Demographic details of repeat adult transplant

Age, median (range)	23 (16 to 32) year
ASA III/IV	15 (62.5)
Co-morbidity	
Yes	20 (83.3)
- Chronic kidney disease	7
- Diabetes Mellitus	4
- Asthma	3
- Ulcerative colitis	2
- A1AT	2
- Hypertension	1
- Cystic fibrosis	1
Weight of the patient, median (range)	61 (33 to 91) Kg
UKELD score	
- at the time of listing, median (range)	56 (47 to 67)
- at the time of transplant, median (range)	61.5 (48 to 68)
MELD score	
- at the time of listing, median (range)	18 (07 to 36)
- at the time of transplant, median (range)	21 (12 to 36)
Waiting time on list for transplant, median (range)	94 (6 to 1160) days
Type of graft	
- Whole	24 (100)
Cold ischemia time, median (range)	433 (87 to 996) minutes
Warm ischemia time, median (range)	36 (21 to 60) minutes

Table 2 - Intra-operative details of repeat adult transplant

	n=24 (%)
Caval Reconstruction	
• Side to side	12 (50)
• Classic piggyback	7 (29.2)
• Caval replacement	4 (16.6)
• End to side	1 (4.2)
Portal vein reconstruction	
• Primary end to end	21 (87.5)
• With interposition graft	3 (12.5)
Arterial reconstruction	
Donor HA to native artery	15 (62.5)
• Donor CHA to recipient CHA or HA proper	6
• Donor CHA/SA to recipient CHA	3
• Donor CHA to recipient SA patch	2
• Donor Celiac trunk to recipient HA proper	1
• Donor CHA/GDA to recipient CHA/GDA	1
• Donor SMA to recipient CHA	1
• Donor SA to recipient GDA bifurcation	1
Aortic conduit	9 (37.5)
Biliary reconstruction	
• Roux-en-Y hepaticojejunostomy	20 (83.4)
• Temporary drain placement	02 (8.3)
• Duct to duct	02 (8.3)

P72

Liver transplantation and the Seventh Day Syndrome: a systematic review of the literature and case series

Mr Lewis Hall[1], Dr James Halle-Smith[2], Mr Angus Hann[1,2], Ms Hermien Hartog[2], Dr Desley Neil[1,2], Mr Thamara Perera[2]

[1]University of Birmingham, Birmingham, United Kingdom. [2]Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom

Introduction: Spontaneous failure of a previously functioning liver allograft in the early post-operative period was described two decades ago as Seventh-Day Syndrome (7DS), characterized by patent vasculature and extensive hepatocyte necrosis with minimal immune cell infiltrate. The purpose of this study was to perform a systematic review of the literature reporting 7DS and further describe the cases that have occurred at our institution.

Methods: A systematic literature search was conducted according to the PRISMA guidelines and relevant publications identified. A retrospective review of adult patients that underwent deceased donor liver transplantation at our institution between January 2010 and April 2020 was performed to identify patients that developed 7DS. Relevant variables and histology findings were obtained from medical records. Existing cases in the literature were combined with cases at our institution to determine pooled incidence, retransplantation and mortality rates.

Results: The literature search identified four case series describing a total of 24 patients with 7DS (Table 1). These cases occurred following living (11/24, 46%) and deceased (13/24, 54%) donor transplantation. Our series identified six additional patients (Table 2). The overall incidence of 7DS was low (pooled incidence 1.1%, 95% CI: 0.2-2.5%) but associated with a high mortality (pooled rate 71.1%, 95% CI: 34.2 - 98.1%). Retransplantation was performed in 14/30 (47%) patients and 10/14 (71%) survived. Deterioration occurred between post-operative day 4 and 12 with significant elevation in transaminases and fever. Extensive hepatocyte necrosis with minimal immune infiltration was the consistent histological finding.

Discussion: 7DS is a rare occurrence following liver transplantation with a high mortality, under-reporting may account for such low incidence. Although associated with a marked rise in liver enzymes and necrosis, without vascular complications or immune rejection, the causative mechanism remains undefined.

Table 1: Characteristics of patients with seventh-day syndrome reported in literature

Author	Cases	Incidence (%) (cases/transplants)	Donor type	Female	Indication	Day of presentation*	Peak ALT (U/l)	Fever	Retransplanted (%)	Survived without retransplant (%)	Mortality (%) HSE days)	Histology results	Immunohistochemistry
Memon et al 2001	10	1.7% (10/594)	DDLT	4	ARLD = 4 PBC = 3 Viral hepatitis = 3	Day 4 to 11	1409†	na	0 (0%)	5 (50%)	5 (50%)	Significant lower number of infiltrating lymphocytes than group with rejection	No evidence of C3, IgM or IgG
Hoang et al 2005	1	0.5% (1/160)	LDLT	0	HBV with HCC = 2 ALF = 1	Day 1 to 6	1152-4032	3	0	0	3 (100%)	1) Massive haemorrhagic necrosis 2) Predominan massive haemorrhagic necrosis. No histology received for third case	Not reported
Zhongwei et al 2011	8	3.3% (8/244)	LDLT	0	HCC = 5 ALF = 1 Viral hepatitis = 4	Day 8 to 12	6300 - 10 000 §	na	0	1 (12.5%)	7 (88%)	Limited inflammatory cell infiltrate in all cases	Increased expression of Fas around portal tracts
Pereira et al 2013	3	Not reported	DDLT	2	PSC = 1 Hepatitis = 1 HCV = 1	Day 7 to 8	7500-15000	3	2 (67%)	0	3 (100%)	All specimens showed massive hepatocyte necrosis. One patient had evidence of mild inflammation	Not reported

* As evidenced by onset of ALT derangement

‡ Mean AST of all patients in series reported

§5 patients in series had ALT reported as >10 000 IU/l

Legend: ALT: Alanine aminotransferase, DDLT: Deceased donor liver transplantation, LDLT: Living donor liver transplantation, ARLD: Alcohol related liver disease, PBC: Primary Biliary Cirrhosis, HBV: Hepatitis B Virus, HCV: Hepatitis C Virus, HCC: Hepatocellular carcinoma, ALF: Acute Liver Failure, PSC: Primary sclerosing cholangitis

Table 2: Clinical characteristics of seventh-day syndrome cases at the Liver Unit, Birmingham

						Day of presentation								
Case Number	Donor type	Age	Gender	Transplant indication	Day of presentation*	Base excess (mmol/l)	Lactate (mmol/l)	Peak ALT (IU/l)	Fever	Day of biopsy and histology	Post-operative day retransplanted	Mortality (<90 days)	Histology results
1	DBD	31	F	Seronegative hepatitis	5	-14.2	14.4	3342	Yes	Not applicable	Not applicable	Yes	None available
2	DCD	70	M	NASH with HCC	7	-12.7	17.9	2599	Yes	Not applicable	Not applicable	Yes	Mild preservation/ reperfusion injury. Normal vascular relationships and no rejection. Mild sclerosis (grade 1)
3	DBD	56	F	Hepatitis C cirrhosis	6	-3.5	6	103904	No	Day 7, Non inflamed portal tracts and zone 3 coagulative necrosis	Day 9	No	Large areas of coagulative necrosis with mild corresponding neutrophilic infiltrate. Portal areas not inflamed.
4	DBD	60	M	HCC	10	-7.6	10.1	2195	Yes	Not applicable	Day 11	No	Perivenular necrosis in keeping with ischaemic damage. Mild inflammation of portal tracts.
5	DBD	36	M	Budd Chiari Syndrome	7	-0.7	13	2673	Yes	Not applicable	Day 10	No	Hepatocyte necrosis. Mild inflammatory infiltrate but no evidence of rejection.
6	DBD	21	F	Seronegative hepatitis	8	-8.2	10.4	9548	Yes	Not applicable	Day 9	No	Portal tracts minimally inflamed. Massive hepatocyte necrosis.

*As evidenced by onset of ALT elevation

†AST reported as ALT result not available

Legend: DBD: Deceased brain death, DCD: Deceased circulatory death, NASH: Nonalcoholic steatohepatitis, ALT: Alanine aminotransferase

P73

Outcomes of patients undergoing third liver transplant surgery

Mr Rugved V. Kulkarni, Mr Angus Hann, Mr James Hodson, Mr Keith Roberts, Prof Darius Mirza, Mrs. Hermien Hartog, Mr Thamara Perera

Queen Elizabeth Hospital, Birmingham, United Kingdom

Introduction: The efficacy of a third liver transplant in the same recipient is not well defined. Due to the scarcity of suitable deceased donors and the desire to achieve the greatest survival benefit from organ transplantation, many believe that a third transplantation is not justified. The aim of this study was to describe the outcomes of third graft liver transplants performed at our institution.

Methods: A single centre retrospective review of all patients that underwent three liver transplants at our institution between January 1989 and August 2020 was performed. Graft survival, donor and recipient characteristics were extracted from hospital medical records. A time to event analysis was performed to compare graft survival of each successive graft. Predictors of long term survival following a third graft were evaluated.

Results: During the study period, 29 patients underwent three liver transplants. All of them received whole liver grafts from decreased brain dead (DBD) donors. Females comprised 48% and the median (IQR) age and United Kingdom End Stage Liver Disease (UKELD) of the recipients was 31 (23-43) years and 60 (54-62) respectively. The common indications were late hepatic artery thrombosis (HAT) (8/29, 27.6%), recurrent autoimmune disease (6/29, 20.7%) and chronic rejection (5/29, 17.2%). The 90-day mortality of the cohort was 6.9% (2/29). At a median follow-up of 39 months, 65.5% (19/29) patients were alive with a functioning liver graft. The commonest cause of third graft loss was recurrence of autoimmune liver disease (4/10, 40%). The graft survival following the third transplant was significantly better than that for the preceding two transplants with a 5 year survival exceeding 70% (p = 0.011).

Discussion: Third liver transplants can achieve long term outcomes comparable to primary liver transplantation and the decision to deny another opportunity should not be based on a presumption of futility.

P74

Investigating the modifiable psychosocial variables influencing access to and outcomes after kidney transplantation in children - a study protocol

Dr Ji Soo Kim[1,2], Dr Jo Wray[1], Dr Stephen Marks[1,2]

[1]Great Ormond Street Hospital for Children NHS Foundation Trust, London, United Kingdom. [2]UCL Great Ormond Street Institute of Child Health, London, United Kingdom

Introduction: Kidney transplantation, compared with dialysis, is often seen as the gold standard in optimising health, reducing mortality and improving quality of life in children with End Stage Kidney Disease (ESKD). We recently surveyed 12 out of 13 UK paediatric nephrology centres on their transplantation plans for all children registered with ESKD. The most commonly cited factors delaying kidney transplantation in these children were: disease-related (36%), availability of a suitable donor (27%) and the child's size (20%). In 19% of children, psychosocial factors were listed as a barrier. Some factors, including psychosocial, may be modifiable through local or national intervention. To inform future interventions, further study is needed to explore the range and nature of these psychosocial factors.

Methods: This is a prospective multicentre (13 UK paediatric nephrology centres) mixed-methods study with QUAL-QUANT (exploratory) and QUANT-QUAL (explanatory) phases. First, we will use thematic analysis to review interviews conducted with NHS professionals, children with ESKD and their families that explore these psychosocial factors. Next, validated questionnaires that measure these psychosocial factors will be distributed to the wider UK cohort of pre-transplant children with ESKD and their families. They will be followed up to 2 years regardless of whether they do or do not receive a kidney transplant. Clinical data will be prospectively collected from local hospital notes and registry data (UK Renal Registry and NHS Blood & Transplant). Families with outlier results will be invited for further interview to explain their findings.

Outcome: The study has been reviewed by the National Institute for Health Research (NIHR) and received a favourable outcome from the Wales REC 4 Research Ethics Committee.

Discussion: This project aims to investigate the psychosocial factors that influence access to and outcomes of kidney transplantation among children in the UK. Findings will be presented at academic conferences and published in peer-reviewed journals.

P75

Cryptococcus: An unusual cause of catastrophic vascular dehiscence in a renal allograft

Dr. Venkat Sainaresh Vellanki[1,2,3], Dr. Deepak Pillai[3], Dr Jaya Saishekar Boyina[1], Dr. Anila Abraham Kurien[4], Dr Ajay Sharma[2], Dr. Ahmed Halawa[2]

[1]Queen's NRI Hospital, Visakhapatnam, India. [2]University of Liverpool, Liverpool, United Kingdom. [3]Burjeel Medical City, Abu Dhabi, UAE. [4]Renopath, Center for Renal and Urological Pathology, Chennai, India

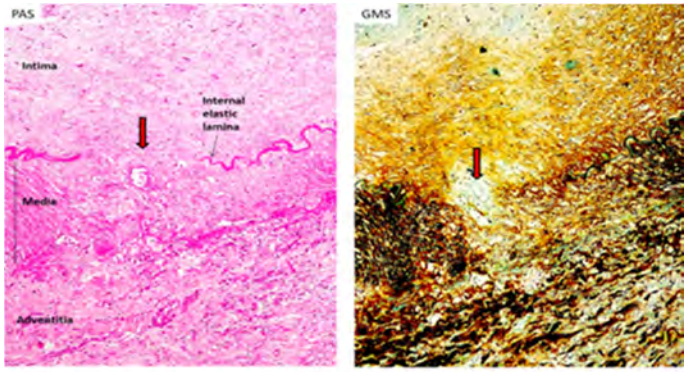
Introduction: Kidney transplantation is the best modality to treat end-stage renal disease. Post-transplant infections pose a major threat to the long-term survival of both the recipient and the allograft. Invasive fungal infections (IFI) constitute 1.3 to 5 percentage in a kidney transplant recipient and usually occur in the later post-transplant period. We describe an extremely rare case of cryptococcal infection in the immediate posttransplant period leading to catastrophic arterial anastomotic site dehiscence in renal allograft.

Case presentation: 35 yr old female underwent deceased donor kidney transplantation from a standard criteria donor. Her immunosuppression included Anti Thymocyte Globulin and Tacrolimus, Mycophenolate sodium, and Prednisolone. Patient developed delayed graft function (DGF). Graft biopsy suggested acute tubular necrosis. The patient recovered from DGF. She was discharged with a nadir serum creatinine of 104micromols/l. She had a fall in the washroom at home. On arrival at the emergency room, she was hypotensive with graft site tenderness. A graft ultrasound was suggestive of a possible page kidney from perirenal hematoma with decreased perfusion to the graft. An emergency surgical decompression was done. Graft anastomotic sites were examined and found to be satisfactory, graft appeared well perfused, a wedge biopsy was taken and the wound was closed. However, graft biopsy later revealed cortical necrosis and a graft nephrectomy was performed and histopathology confirmed extensive cortical and medullary necrosis with numerous spherical yeast cells surrounding the renal artery which was reported as Cryptococcus.

Outcome: In the post-operative period patient succumbed to sepsis despite appropriate antifungals, broad-spectrum antibiotics, and supportive care.

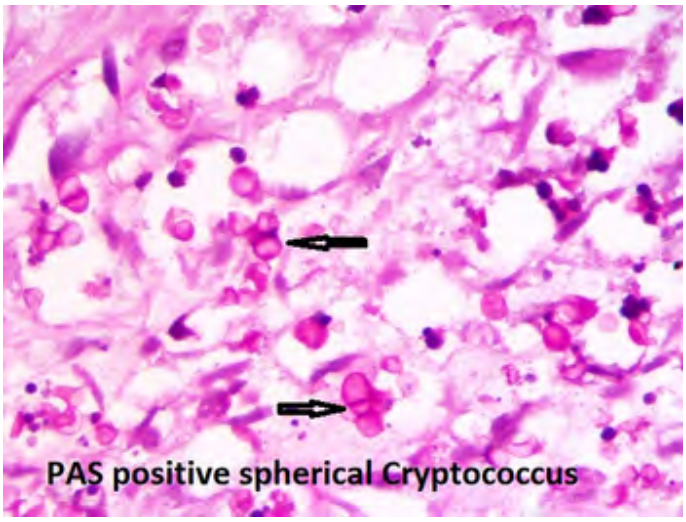
Discussion: Invasive fungal infections in kidney transplantation are associated with a high mortality rate. The traditional timeline for occurrence is changing owing to aggressive immunosuppression protocols, varied organ preservation techniques. Fungal infections are known for vascular invasion and tissue necrosis. A high index of suspicion is needed to act early and decisively.

Figure 1



The internal elastic lamina has ruptured (red arrow), the media and external elastic lamina completely destroyed.

Figure 2:



P76

A single centre review of five-year mortality in renal transplant recipients

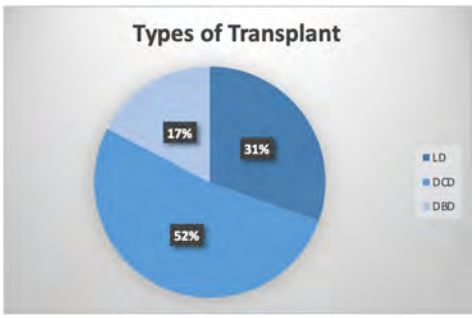
Doctor Samuel Duffy, Doctor Rachel Davison

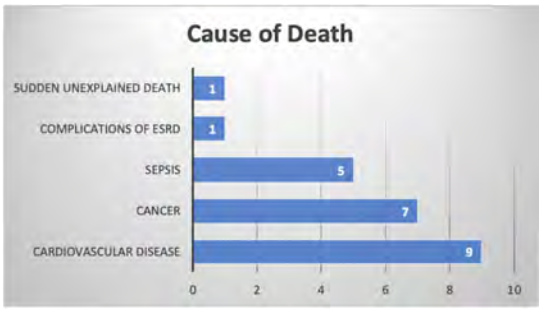
Sunderland Royal Hospital, Sunderland, United Kingdom

Introduction: In 2019, NHSBT published their annual report which identified the North East as an outlier for one- and five-year patient mortality in adult recipients of kidney-only transplantation. The national rate of five-year patient survival following deceased donor kidney transplants in adult patients is 87% (95% CI 86-88) while in our region it was 82% (95% CI 76-87).[1]

Methods: We reviewed all deaths of transplant recipients within five years of receiving a kidney transplant from January 2006 to October 2020 looking for any preventable risk factors. We included both live and deceased donor recipients in our study. We assessed other patient factors including age, graft function and immunosuppression burden at the time of death.

Results:





23 transplant patients were included in this study. The median age at time of death was 60 years. 20 patients (87%) had functioning grafts at time of death.

The median time of death after transplant was 29.5 months with cardiovascular disease (CVD) the commonest cause. All patients diagnosed with cancer were on triple immunosuppression at time of death. The most frequent cause of cancer-related death was colorectal cancer (42%) with a median diagnosis time of 2.4 years after transplantation.

Discussion: Our retrospective study shows that CVD is the main cause of death in patients within five years of receiving a kidney transplant in our Trust, followed by malignancy and sepsis. This is consistent with European data which reports 40-55% of deaths post-transplant are due to CVD[3]. Although our sample size is small, the proportion of deaths attributed to post-transplant malignancy is higher than ERA-EDTA estimates[4]. This study highlights the need for further assessment of both patient and environmental factors that may lead to a possibly higher incidence of cancer-related deaths. These include an ageing transplant population, increased immunosuppression burden, socio-economic inequalities and use of cancer screening services.

P77

Native nephrectomy and simultaneous renal transplantation

Mr Damian McGrogan[1], Dr Aisling Courtney[1], Ms Hannah Magowan[1], Mr Stephen O'Neill[1], Dr Mairead Convery[2], Dr Grace McCall[2], Mr Tim Brown[1]

[1]Regional Nephrology and Transplant Unit, Belfast, United Kingdom. [2]Dept Paediatric Nephrology, Royal Belfast Hospital for Sick Children, Belfast, United Kingdom

Introduction: Kidney transplantation pre-emptive of dialysis foregoes the complications of dialysis. Graft survival following kidney transplantation is independently, negatively influenced by length of time spent on dialysis. Prior to kidney transplantation, it may be necessary to perform native nephrectomy to make space for the transplanted kidney or to mitigate potential risks of sepsis or disease recurrence.

Case presentation: Six cases of simultaneous nephrectomy and kidney transplantation recipients were performed between September 2019 and September 2020 using living or deceased donor kidneys (3 LDTx, 2DCDTx, 1DBDTx). Indications for nephrectomy:

- to create pelvic space in recipients with massive native kidneys (4);
- obstructive native uropathy;
- ongoing protein loss in (age 3; 14.7kg) with congenital nephrotic syndrome.

Outcome: Nephrectomies were performed prior to the implant. Two patients developed wound complications, one requiring an abdominal mesh repair. Primary function was observed in 4/6 cases and delayed graft function in 2/6. Post operative dialysis was required in one patient for hyperkalaemia via a temporary dialysis central venous catheter.

Discussion: The conventional approach to patients with indications for pre transplant nephrectomy is to perform nephrectomy and maintain the patient on renal replacement therapy. Anaemia may necessitate transfusion and subsequent HLA sensitisation. These issues can be avoided by changing the plan to attempt a simultaneous nephrectomy and transplant as part of their care pathway. Simultaneous nephrectomy and transplant in this short series of cases has been successful with no compromise to graft outcome.

P78

Cardiothoracic recipient transplant co-ordinator (CT RTC) network: building national resilience due to the COVID-19 pandemic

Mr Richard Quigley[1], Mrs Cheryl Riotto[1], Mrs Chrissie Lawson[1], Mrs Jane Nuttal[2], Mrs Rochelle Pointin[3], Mrs Jane Lockhart[4], Mrs Kirsty McGovern[4], Ms Stephanie Dunn[5], Mrs Lorraine Jerrett[4], Mrs Nicky Crouchen[6], Mrs Laura Stamp[7], Ms Sadie Von Joel[7]

[1]Royal Papworth Hospital, Cambridge, United Kingdom. [2]Wythenshawe, Manchester, United Kingdom. [3]Queen Elizabeth Hospital, Birmingham, United Kingdom. [4]Golden Jubilee Hospital, Glasgow, United Kingdom. [5]The Freeman Hospital, Newcastle, United Kingdom. [6]Harefield Hospital, London, United Kingdom. [7]NHS Blood and Transplant, London, United Kingdom

Introduction: During the first peak of the COVID 19 pandemic most Cardiothoracic Recipient Transplant Co-ordinator (CT RTC) teams were broken up due to the redeployment of staff to other areas. Cardiothoracic transplantation declined significantly as there was a clear national strategy that the focus was COVID-19 treatment. There is now an expectation that the NHS has the ability to undertake business as usual as well as the acute COVID work for subsequent surges. A gap was highlighted for inter-organisational support in order to build resilience.

Methods: The concept was devised whereby Cardiothoracic Recipient Transplant Co-ordinators nationally could assist each other to minimise acute disruption but also work more collaboratively and more effectively in the long term. Working collaboratively with NHSBT an approach was made to senior CT RTCs from all seven cardiothoracic centres to ascertain if an appetite to formulate a recipient co-ordinator network existed. Following positive feedback, Terms of Reference were created, an Agenda formulated for the first virtual meeting then took place on 5th November 2020. The meeting feedback was extremely favourable to continued existence supported.

Results: A new group has been created, initially led by the senior and more experienced transplant co-ordinators from each of the national centres. Whilst born out of the COVID 19 pandemic, the aspiration is that it will have a positive effect on pre and post-transplant care by involving all CT RTCs nationally to benchmark against each other and improve care at all centres.

Conclusion: Cardiothoracic Recipient Transplant Co-ordinators are a small selective group of staff who are integral to the transplant process. Whilst they have a voice within other forums they do not have a national group of their own. Setting up this network will hopefully empower staff whilst simultaneously putting mechanisms in place so that they can develop a national minimum standard of practice.

P79

Changes in the management of devastating brain injuries in an emergency department of a neurosurgical referral centre

Mr Dominic Pearson[1], Dr Katja Empson[2], Mrs Charlotte Goodwin[2]

[1]Cardiff University, Cardiff, United Kingdom. [2]University Hospital Wales, Cardiff, United Kingdom

Introduction: In 2019, Rivers et al. reviewed the experience of using the 'Devastating Brain Injury (DBI) pathway' at Southmead hospital with a focus on ICU resources, patient outcomes and organ donation. Rivers et al. showed improved rates of organ donation and approach to EOL care before and after the implementation of the pathway. Their data also demonstrated an 8% survival rate following an initial diagnosis of perceived DBI. However, there are very limited data to justify the use of the 'DBI pathway' or national guidelines in other hospitals. This study aims to add to the literature base by reviewing whether there was a change in the management of patients with perceived DBI in the emergency department (ED) of a Neurosurgical Referral Centre.

Methods: This was a retrospective cohort study. We collected and compared data representing prognostication, end-of-life (EOL) care and organ donation in patients with perceived DBI who presented to the ED for a 1-year period both before and after updated national guidelines were published in 2018. Patients for inclusion in the project were between 18 and 80 years of age and admitted through the ED with a primary acute brain injury. Due to lack of access to this database secondary to the impact of COVID-19, the patients who actively died or recovered/survived for any period following prognostication in ICU were not included in this project.

Results: 87 patients were identified as having a perceived DBI across the two time periods. The same number (n=4) of inappropriate withdrawal of life-sustaining treatment (WLST) occurred in the ED in both periods. A non-significant difference was seen in patient outcomes, but a lower rate of donation after circulatory death and a higher donation after brain death was seen in the recent year.

iscussion: The project adds to the understanding of the patient demographics in perceived DBI and how the patients are currently managed in one ED. Broadly, the results from this project suggest improvements in EOL care and organ donation. Further data collection is needed to allow further analysis of the results.

P80

Creating unique and personal keepsakes as part of end of life family support

Mrs Alison Mitchell, Ms Megan Reid

NHSBT, Glasgow, United Kingdom

Introduction: As part of end of life care and family support, SNODs will offer keepsakes, commonly in the form of hair-locks or handprints. These are not always practical to obtain or of great quality due to the patient's hands being oedematous and thus producing a poor quality handprint, or in the case of hair-locks, for cultural or cosmetic reasons.

Case presentation: In Scotland, following a fact finding visit by the Regional Manager to a hospital in America, alternative ideas were discovered. One such idea was to create a fingerprint collage, using the patient and family's fingerprints, to form the leaves on a tree which would represent their family tree. The second idea was to take a single ECG complex and insert it into a small glass bottle, finished with a tied ribbon, and thus making a heartbeat in a bottle.

Outcome: These ideas were initially adopted by some members of the SNOD team and following very positive feedback from families and Critical Care staff, were rolled out so that all donor families were offered these alternatives. Families are able to participate in creating unique designs which have included using their loved one's favourite colours, adding fingerprints at a later time from family members who could not be present in the hospital and some families have even added treasured prints at home such as a family pet's paw print.

Discussion: Keepsakes are very personal and emotive items and whereby some items are not wanted by a family such as a hair lock or a hand print because they are viewed as unsettling, others such as a heartbeat in a bottle or forming a collage of fingerprints to create a family tree are more appealing. These alternative, simple and more attractive keepsakes are more often accepted and create irreplaceable and cherished mementos.

P81

Continued professional practice course

Mrs Vanessa Pritchard[1], Miss Sarah Mason[2]

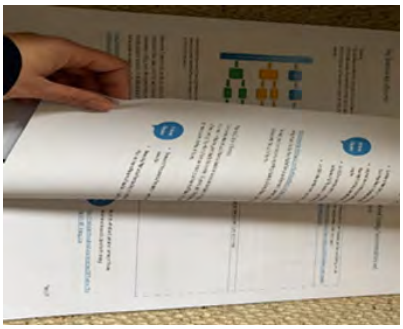
[1]NHS Blood and Transplant, Cardiff, United Kingdom. [2]NHS Blood and Transplant, London, United Kingdom

Introduction: It is paramount that unique advance communication skills that Specialist Nurses in Organ Donation uphold are maintained and deliberately practiced through an annual mandatory course. With face to face facilitation being prohibited rapid implementation of a virtual Continued Professional Practice Course (CPPC) was required to replicate previous shared practice courses. The distinctiveness of CPPC was the ability to build on previous themes through a virtual platform with integration of Forum Theatre. This was supported by self-directed supportive workbooks alongside corresponding webinar from expert personnel.

Case presentation: The overarching theme of Critical Thinking allowed delegates to share experiences during clinical practice and allowed knowledge building and application of principles to their unique roles. Breakout rooms facilitated group work sessions alongside interaction of chat boxes and annotates resulting in delegates feeling engaged. The supportive workbook reinforced shared practice themes. The delegates had designated time within the session to view webinars and undertake reflective practice.

Outcomes: Feedback highlighted virtual facilitation reduced travel time, travel costs and allowed work life balance alongside the ability to shared practice, observe advanced communication skills and re-establish links with regional teams. Anxieties of working from home without interruption and maintaining a good internet connection were expressed. Reassurance from the facilitators experiencing the same anxieties allowed deep and meaningful shared practice from participation.

Discussion: Virtual facilitation of CPPC is a completely new concept in delivering shared practice courses, therefore making it difficult to compare comparative data with previous years. However, key performance indicators could identify key themes alongside delegate formal feedback for shared practice future courses. Early delegates feedback highlighted the topic theme to be extremely relevant and they embraced sharing case studies. Forum Theatre equally received positive feedback although commonly, a proportion of delegates preferred Forum Theatre face to face.



P82

The psychological impact on a NORS (National Organ Retrieval Service) team of paediatric retrieval: one centre's recent experience

Mrs Bianca Lord, Miss Emily Gilchrist, Mr Richard Quigley, Mr Marius Berman, Mr Pradeep Kaul, Mrs Jen Baxter

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Organ donor retrieval is an intricate procedure requiring highly specialised and skilled multidisciplinary teams. Paediatric retrievals can be an emotionally challenging process and despite the new Opt-Out Law surrounding UK organ donation remains sporadic. Consequently, they are extraordinary circumstances for even an experienced NORS team member, meaning the infrequent nature causes varying individual exposures. This study aimed to explore the psychological impact of paediatric retrievals on staff to aid the formalisation of a support strategy.

Method: A subjective survey was populated and sent to members of a Cardiothoracic NORS team to determine individual coping strategies and the importance of debriefing following paediatric retrievals. Respondents were surgeons, scrub nurses, donor care physiologists and transplant practitioners.

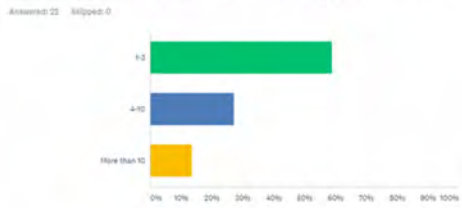
Results/outcome: 22 members responded to the survey, of which 59% had experienced 1-3 paediatric cases and 13, over 10. 91% could recall a difficult situation and there was unanimous agreement that debrief is necessary, but dependent on individual preference. Respondents reported self-reflections, debriefing and thinking about the recipient helped process emotions and felt discussions with palliative specialists and psychologists prove beneficial in the long-term.

Discussion: Paediatric retrievals are emotional and intensity differs between individuals regardless of exposure, which raises concerns about the availability of psychological support. Members are passionate for the profession but understand personal impaction and their own coping capabilities. The lack of existing studies, combined with this survey indicates the need for formalised support structures to support all members of a NORS team. If required, external sources should be available and individuals encouraged outsourcing emotional support if required. This survey has also led the senior management within our transplant service to reflect and attempt to put advanced support mechanisms in place for new staff prior to their first paediatric retrieval.

Tables 1 and 2 – examples of questions and responses:

Table 1:

How many paediatric organ retrievals have you been involved with?

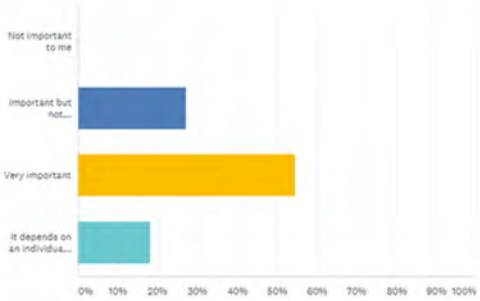


ANSWER CHOICES	RESPONSES	
1-3	59.09%	13
4-10	27.27%	6
More than 10	13.64%	3
TOTAL		22

Table 2:

How important in your opinion do you think it is to debrief following a paediatric retrieval?

Answered: 22 Skipped: 0



ANSWER CHOICES		RESPONSES	
Not important to me		0.00%	0
Important but not particularly for me		27.27%	6
Very important		54.55%	12
It depends on an individual basis	Responses	18.18%	4
TOTAL			22

P83

Retrospective analysis of post-transplant erythrocytosis cases at a tertiary kidney transplant unit

Dr Stuart Deoraj[1], Dr Elham Asgari[2], Dr Sophie Ganjavian[2], Dr Nicholas Jackson[2]

[1]Kings College Hospital, London, United Kingdom. [2]Guys and St Thomas Hospitals, London, United Kingdom

Introduction: This study investigated the prevalence of Post-Transplant Erythrocytosis (PTE), potential risks for its development and outcomes of treatment in patients transplanted between 2013 to 2018.

Methods: We conducted a retrospective study of patients who received a Kidney or Kidney-pancreas Transplant between 2013 and 2018. We analysed donor and recipient demographics, original disease, transplant type, CMV, HLA-mismatch, Immune-suppression, and PTE treatment outcomes.

Results: Of 568 transplant patients, 46(8%) fulfilled the criteria for PTE given sustained haematocrit >0.51. The risk of PTE was significantly higher in men (OR 5.375 CI 2.24-12.9 p<0.05) and in DCD SPK transplants compared to other types (OR 5.57, p<0.05). Donors to patients developing PTE were 6.5 years younger than the non-PTE group, p=0.008. IgA nephropathy conveyed a higher risk of developing PTE (OR 2.296 p=0.04). ACE inhibitors did not significantly impact haemoglobin or symptoms of PTE.

	Patient demographics and clinical data divided by the presence of erythrocytosis			
	Erythrocytosis (N=46)	No erythrocytosis(N=522)	OR (CI)	P-value
Haemoglobin (g/L)	161 +/- 9.9	122+/-17.5		<0.000
Haematocrit (PCV)	0.51 +/- 0.03	0.38 +/-0.06		<0.000
Male (n)	40 (87%)	289 (55.4%)	5.37 (2.24 to 12.9)	0.0002
Recipient Ethnicity-Caucasian	31 (67.4%)	298 (57.1%)	1.55 (0.82-2.95)	0.18
Recipient Age (years)	44.5 +/- 12.2	47.7 +/- 13.8		0.127
Donor Age	43.1 +/-16.4	49.6+/-15.8		0.008
DCD SPK Transplant Type (n)	8 (17.4%)	19 (3.6%)	5.57 (2.29-13.56)	0.0002
IgA Nephropathy Index Disease (n)	9 (19.6%)	50 (9.6%)	2.30 (1.05-5.03)	0.04
Warm Ischaemic Time (minutes)	39.5+/-15.4	40.5+/-13.8		0.658
Cold Ischaemic Time (minutes)	600+/-357.8	642+/-354.9		0.47

Patient Haemoglobin divided using ACE inhibition				
	ACEi UseN=22	No ACEi UseN=24	T-test	p-value
Haemoglobin (g/L) at 24 months	160.9(+/-14.5)	158.96 (+/- 7.08)	0.587	0.28

Discussion: Our study demonstrates a statistically significant increased risk of PTE among men, persons with IgA nephropathy and those who have received DCD SPK transplants, particularly from young donors.

P84

Preliminary results of liver cell harvest using ultrasound histotripsy: description of a novel technique and implications for cell transplantation & cancer therapy

Mr Saied Froghi[1], Mr Matheus Oliveira de Andrade[2], Dr Layla Mohammad Hadi[2], Dr Hassan Rashidi[3], Prof Alberto Quaglia[1], Prof Barry Fuller[2], Prof Nader Saffari[2], Prof Brian Davidson[1]

[1]Royal Free Hospital, London, United Kingdom. [2]University College London, London, United Kingdom. [3]Institute of Child Health, London, United Kingdom

Introduction: Allogenic hepatocyte transplantation is an attractive alternative to whole organ transplant particularly for the treatment of metabolic disorders and acute liver failure. However, the shortage of human donor organs for cell isolation, the low cell yield from decellularization regimes & low engraftment rates have restricted its clinical application. We provide the first description of isolating hepatocytes using ultrasound histotripsy.

Methods: Using human organ retrieval techniques pig livers were retrieved and transported in ice-cold storage as with standard clinical practice. Following 2 hours of cold-storage, the livers were flushed with organ preservation solution and placed on an organ perfusion circuit to maintain viability with perfusion using Soltran ™ organ preservation solution via the portal vein (Temp 24-30 Celsius). The perfusion circuit was non-oxygenated. Perfused livers (n=5) were subjected to histotripsy (total: 130 lesions). Lesions were generated by applying a single element 2 MHz bowl-shaped transducer (Sonic Concepts, H148). Following histotripsy tissue response in the core of the treatment site was analysed. The core fluid within lesion was aspirated and cultured in RPMI cell culture medium with antibiotic. Cell cultures were analysed at 1, 7 & 21 days for cell viability and a live-dead assay was performed. The histotripsy sites were excised for histological characterisation with H&E-stain.

Results: Histotripsy created a subcapsular lesion (~50mm below capsule) which contained a core suspension of cells. An average of 61×104 cells/mL was isolated. Hepatocytes in the aspirate were viable at 24hrs and remained viable in culture for up to 1-week as determined by Phahlloidin/DAPI stains. Small number of wells were cultured for up to 21 days, which revealed metabolic activity by live cells. Live-dead assays confirmed cell viability at 1 week (Day 1: 0.12% to Day 7: 0.45% live cell; $P<0.0001$) which retain metabolic activity and morphology. Cell Titre-Glo shows average metabolic activity peaks at one week (average luminescence 24.6 RLU; $P<0.0001$) post culture compared to control (culture medium alone) and by day 21 of culture had reduced to 1/3 of peak level (7.85 RLU).

Conclusion: Histotripsy of the liver allows isolation and culture of hepatocytes with a high rate of viability after 1 week in culture. This technique may have wide applications for cell therapy. This remains to be validated in human tissue.

P85

Normothermic machine perfusion is associated with a higher rate of rejection following retransplantation

Mr Angus Hann[1,2], Mr Hanns Lembach[1], Mrs Siobhan McKay[1,2], Ms Anisa Nutu[1], Dr Desley Neil[1,2], Professor Darius Mirza[1,2], Mrs Hermien Hartog[1], Mr Thamara Perera[1]

[1]The Liver Unit, Birmingham, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom

Introduction: Graft rejection in the early post-operative period following liver transplantation (LT) is common and requires additional immunosuppression. Despite successful treatment in the majority of patients, it increases hospital length of stay and associated sequalae. The primary aim of this study was to determine the incidence of early acute rejection (AR) in recipients of normothermic machine perfusion (NMP) preserved liver grafts. Secondary aim was to determine if perfusion time and a previous liver transplant influence incidence of AR.

Methods: Our institutions prospectively maintained NMP database of adult patients that underwent transplantation between November 2018 and November 2020 was reviewed. Acute rejection was defined as biopsy evidence of T-cell and/or antibody mediated rejection within 3 months of LT. Severe rejection was based on histological features. Patients were grouped into those that experienced acute rejection (AR) and those that did not (No AR). Demographic, organ preservation and transplant variables were compared.

Results: During the study period, 54 patients received an NMP preserved graft.. The median age (IQR) was 47 (30-54) and 44% were repeat liver transplants (reLT). Demographics, indication, and preservation details are displayed in Table 1. The incidence of acute rejection in the cohort was 43% (23/54). Severe rejection occurred in 6/23 (26%) and the median (IQR) day of occurrence was post-operative day 8 (7-11) (Table 1). AR occurred more frequently after reLT with NMP perfused liver graft (than after primary transplantation with NMP liver grafts (14/24, 58% vs 9/30, *P=0.04*%). The perfusion time in the AR group was longer but did not reach statistical significance (*P=0.11)* (Table 1).

Discussion: AR following NMP is common and those undergoing retransplantation are at a higher risk. A longer duration of NMP appears to be associated with subsequent acute rejection, further research is required to delineate mechanisms in which activation of T and B lymphocytes occurs with NMP.

Table 1: Analysis of NMP cohort

	Total sample (n=54)	Acute rejection (n= 23)	No acute rejection (n=31)	P Value
Female	20/54 (37%)	9/23 (39%)	11(35%)	0.97
Age , Years (IQR)	47 (30-54)	41 (27-52)	51 (40-56)	0.07
UKELD score†	56 (52-59)	58 (53-60)	56 (51-58)	0.38
Retransplant	24 (44%)	14/23(61%)	10/31(32%)	0.04*
Transplant indication (%)				
Autoimmune liver disease	8 (13%)	5 (22%)	3 (10%)	0.217
Chronic rejection	3 (6%)	3 13%)	0	0.04*
Other	28 (52%)	15 (65%)	28 (90%)	0.02*
Preservation time (minutes)				
Cold Ischaemic Time	380 (329-473)	405 (324-479)	375 (331-464)	0.71
Perfusion time	681 (479-962)	826 (544-1053)	592(471-879)	0.11
Total preservation time	1080 (876-1381)	1279 (963-1461)	983(855-1221)	0.85

Legend: UKELD= United Kingdom model for end stage liver disease. *Significant at the alpha value of 0.05. The chi square test and Mann-Whitney U-test used for categorical and continuous variables respectively.

P86

Bridging the gap: developing transplant partnerships across international borders

Dr Sergey Babloyan[1], Dr Milena Voskanyan[1], Dr Helene Nazaryan[1], Dr Poghos Geghikyan[1], Miss Miriam Manook[2,3], Prof Nizam Mamode[2], Dr Ashot Sarkissian[4]

[1]Arabkir Medical Center, Yerevan, Armenia. [2]Guy's Hospital, London, United Kingdom. [3]Duke University, Durham, USA. [4]Arabkir Medical Center, Yerevan, United Kingdom

Background: Maintaining a kidney transplantation program in resource-limited countries is a complex task, often requiring support and expertise from abroad. In Armenia (Former Soviet Republic), living related kidney transplantations (LRDT) have been performed at a single center since 2002. In light of an increasing national incidence of patients receiving chronic haemodialysis for end stage renal disease (ESRD), we have developed a partnership with Guy's Hospital, UK, to support and develop our transplant program.

Materials and methods: A retrospective chart review was performed of all patients who have undergone kidney transplant in Armenia. In addition, key stakeholders involved in the development and operation of the nation's only kidney transplant program were interviewed for an in-depth review of the history and challenges of transplantation in Armenia.

Results: Between 2002 and 2019, 172 LRDT's were performed (4 re-transplantations). Following implementation of the transplant partnership, mean number of transplantations per year increased from 8.6 transplants per year (2002-2016) to 14.3 transplants per year (2017-2019). The mean age of recipients was 34.0±13.4 years (range=7.1-65.7), 12 (6.9%) were children, 116 (67.4%) male. 73 patients (42%) had peri- (n=4) and postoperative (n=69), surgical complications. 17 (9.9%) patients had delayed graft function requiring hemodialysis in 10. 69 pts (40.1 %) had episodes of acute rejection, 26 (15.1%) of which had more than 1 episode. Late complications included infectious (n=23) and malignant (n=13) processes. On long term follow up, 126 pts had functioning grafts, 26 lost grafts, 17 died with functioning graft, 3 were lost to follow-up. One-, 3-, 5- and 10-years graft survival was 96%, 94%, 92%, 85% - respectively.

Discussion: Despite significant challenges, our data suggests that a kidney transplant program could be successfully and safely established in resource-limited countries, with acceptable outcomes. Sustained international cooperation is of utmost importance in expanding and improving transplant options.

P87

Living-donor kidney transplantation in a recipient inadvertently exposed to COVID-19

Mr Dilan Dabare, Mr Muhammad Khurram, Mr Ismail Mohamed

Royal London Hospital, London, United Kingdom

Introduction: The second wave of the COVID-19 pandemic has challenged units to maintain elective services, whilst protecting patients. We present a case of a living-donor recipient who seroconverted immediately after transplantation and required treatment for early rejection.

Case presentation: A 37-year-old man with ESKD secondary to obstructive uropathy received a kidney from his 39-year old cousin (mismatch 111). Both donor nephrectomy and implantation were uneventful. Basiliximab induction with myocophenalate mofetil, tacrolimus and prednisolone maintenance were administered. Prior to transplantation, both donor and recipient were asked to self-isolate for 2 weeks and tested negative for COVID-19 (nasopharyngeal SARS-CoV-2 PCR) 3 days and 1 day prior to transplant. The preoperative admission pathway, operating theatres and post-operative care were delivered on a 'COVID-19-free' floor. He was in a side-room, with a nurse dedicated solely to his care. Despite this, on day 4 the recipient tested positive for SARS CoV-2. Further questioning revealed that he had broken his isolation 5 days before admission and been in contact with a relative who subsequently tested positive. Other patients/staff in area were not infected.

Outcome: The patient remained well, with no fevers, respiratory symptoms or chest x-ray changes. However, graft function plateaued and then declined (Fig. 1), despite a normal ultrasound scan and tacrolimus levels. A day 7 allograft biopsy showed borderline rejection (mild/multifocal tubulitis; C4d negative; Remuzzi 1), with no DSAs. Due to the declining function, decision was made to pulse with methylprednisolone, whilst maintaining the same immunosuppression. The patient was transferred to a COVID-19 ward, but no additional treatment was required. The graft function improved, the patient discharged on day 11 and reviewed in a separate outpatient area away from other transplant patients.

Discussion: This case highlights the importance of preoperative counselling/checks and the unique challenges of delivering living-donor transplantation during a pandemic.

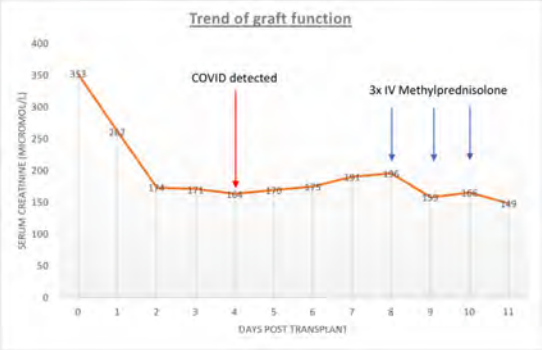


Fig. 1.

P88

Case report: paediatric simultaneous renal transplant and native nephrectomy in congenital nephrotic syndrome (CNS)

Dr Grace McCall[1], Dr Emma O'Hagan[1], Dr Mairead Convery[1], Mr Tim Brown[2], Dr Aisling Courtney[2]

[1]Royal Belfast Hospital for Sick Children, Belfast, United Kingdom. [2]Belfast City Hospital, Belfast, United Kingdom

Introduction: CNS is defined as a triad of nephrotic range proteinuria, hypoalbuminaemia and oedema, occurring in the first 3 months of life.[1] Finland has the highest incidence (12 per 100,000 live births) with Northern Ireland having an increased incidence of 8 per 100,000 live births compared to the rest of the UK/worldwide (2.5 per 100,000 live births.)[1-2] The historical approach to patients with CNS and transplantation consists of bilateral native nephrectomy and renal replacement therapy prior to transplantation.[3]

Method: 3 year old girl with NPHS1 CNS, diagnosed at 7 weeks of age. Albumin dependent from diagnosis. Unilateral nephrectomy at 2yrs. Albumin requirement fell from 57mls/kg/week to 10mls/kg/week. Estimated glomerular filtration rate fell to 16mls/min/1.73m^2 by 3yrs of age. Living donor transplantation discussed through joint adult and paediatric nephro-urology transplant meeting. 4 surgical options considered: second nephrectomy, 6 weeks haemodialysis then transplant; embolisation of native kidney and transplant; transplant without native nephrectomy or simultaneous native nephrectomy and transplant. Risks and benefits evaluated. Success measured with respect to graft function, urine protein creatinine ratio (uPCR), post-operative complications and length of stay.

Results: Decision to proceed with simultaneous native nephrectomy and transplantation. 1-1-0 mismatch, ABO compatible. Midline laparotomy with Cattell-Brasch approach to retroperitoneum. Right sided nephrectomy successful. Donor kidney, single vessels with aorto-caval anastomosis. Warm ischaemic time 22 minutes. No reperfusion concerns, urine passed on table. Recipient creatinine 254mmol/L pre-transplantation with day one creatinine 24mmol/L. 3 months post transplantation, median uPCR 51mg/mmol (IQR 36-66) and creatinine 33mmol/L (IQR 26-35). No issues with thrombosis or bleeding. Day 6 post-op positive urine culture treated. Discharged home day 13.

Discussion: This is the first reported successful paediatric simultaneous native nephrectomy and living donor transplant in CNS. There were no associated thrombotic events and graft function is excellent at 3 months. We highlight the importance of multi-team collaboration and consideration of an individualised approach.

P89

Operative records in renal transplant surgery: audit against rcs good surgical practice and recommended guidelines to BTS

Mr Ahmed Ghoneima, Dr Camilla Davies, Ms Joanna Aldoori, Mr Andrew Robson

St. James's University Hospital, Leeds, United Kingdom

Introduction: An operation note is a medicolegal document recording a procedure and important postoperative care instructions. The Royal College of Surgeon's Good Surgical Practice (GSP) outlines eighteen items that an operation note should include, however, these are broad and not specific. Patient records are migrating to an electronic format and making use of generic templates based on RCS GSP. Transplant is a unique field where additional details, such as graft anatomy and ischaemia times, are crucial for procedure documentation and are associated with post-operative outcomes, may not be covered.

Methods: An audit of renal transplant operation notes was undertaken within a large single centre over 7 months (Jan-Aug 2020). Patients were identified through a prospectively managed database. Electronic patient records (EPR) operation notes were audited against GSP guidelines. Transplant surgeons within the centre were surveyed regarding essential information in transplant operation notes; modifications and additions to GSP were subsequently produced (figure 1). These same operation notes were then audited against these modified guidelines. A new Transplant-specific operative template will be introduced and performance against this re-audited.

Results: 89 operation notes were included. Of these, 34.3% were compliant with the GSP. There was 100% compliance in fields automated through EPR (e.g. date and time, signature) but variability in data points not mandated by EPR. Six consultant surgeons were surveyed and transplant specific modifications to GSP were made. Re-audit against these additional items revealed a 13.8% compliance, reflecting the importance of transplant-specific documentation. We will present compliance to the new operation note template after introduction.

Discussion: This study has demonstrated the benefit of EPR Operative Notes as well as the need for specific operation notes for transplant surgery. Other specialities have introduced guidance for operation notes (e.g. the British Orthopaedics Association's Knee Replacement a Guide to Good Practice) which has improved documentation. Therefore, we propose Transplant-specific operation note guidelines to BTS in order to standardise documentation in transplant surgery.

Figure 1. Outlining RCS GSP guidelines and modification for renal transplantation

RCS Eng. Good Surgical Practice Operation Note Guidelines

- Date and time
- Elective/emergency procedure
- Names of the operating surgeon and assistant
- Name of the theatre anaesthetist
- Operative procedure carried out
- Incision
- Operative diagnosis
- Operative findings
- Any problems/complications
- Any extra procedure performed and the reason why it was performed
- Details of tissue removed, added or altered
- Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials
- Details of closure technique
- Anticipated blood loss
- Antibiotic prophylaxis (where applicable)
- DVT prophylaxis (where applicable)
- Detailed postoperative care instructions
- Signature

Adaptation of RCS Eng GSP Operation Note Guidelines for Renal Transplantation

- Date and time
- Elective/emergency procedure (i.e. **deceased/live donor**)
- Names of the operating surgeon and assistant
- **Responsible Consultant**
- Name of the theatre anaesthetist
- Operative procedure carried out
- Operative diagnosis to include
  - **Primary renal disease**
  - **Renal replacement therapy/vascular access**
- Incision
- Operative findings:
  - **Recipient blood vessels**
  - **Reperfusion characteristics**
- Any problems/complications
- Any extra procedure performed and the reason why it was performed
- Details of tissue removed, added or altered to include:
  - **ODT Number**
  - **Donor age**
  - **Donor gender**
  - **Donor past medical history – diabetes, hypertension**
  - **Right/Left Graft**
  - **Donor Type (Live/DBD/DCD)**
  - **Mismatch**
  - **Vascular anatomy/reconstruction**
  - **Timings (cross clamping, out of Ice, reperfusion, cold ischaemia time and warm ischaemia time)**
- Identification of any prosthesis used, including the serial numbers of prostheses and other implanted materials (**Ureteric Stent**)
- Details of closure technique
- Estimated blood loss
- Antibiotic prophylaxis
- DVT prophylaxis (where applicable)
- Detailed postoperative care instructions
  - **Post-op K+**
  - **Target BP**
  - **Ultrasound scan**
- Signature

P90

Caught between a rock and a hard place – a comparison between Haemodialysis reliable outflow (HeRO) grafts and tunnelled haemodialysis line (THL) with superior vena cava (SVC) stent for patients with central venous stenosis

Mr Prashanth Chowdary, Miss Shraddha Shetty, Dr Dene Ellis, Miss Cinzia Sammartino, Mr Ben Lindsey, Mr Rajesh Sivaprakasam, Mr Vassilis Anastassiou, Dr Muhammad Rashid Akhter, Dr Tim Fortheringham, Mr Ismail Mohamed, Mr Muhammad Arslan Khurram

Bart's Health NHS Trust, London, United Kingdom

Aims: To compare the outcomes of long-term tunnelled haemodialysis line (THL) and Superior vena cava (SVC) stent versus HeRO grafts in complex vascular access patients.

Methods: All haemodialysis patients identified to have complex vascular access from Jan 2015-Oct 2020 at The Royal London Hospital were studied retrospectively. Complex vascular access was defined as the concurrent lack of patent arteriovenous fistula/graft and the need for superior vena cava (SVC) stent to maintain dialysis access.

Results: A total of 27 patients were included in this study. 14 patients had HeRO graft placement, 4 patients underwent SVC stenting for THL insertion and 9 patients underwent SVC sharp recanalization for THL placement.

	HeRO	SVC stent + THL	SVC recanalization + THL	Significance (p-value)
Numbers	14	4	9	-
Age (years)	56	65	59	0.50
Dialysis vintage (years)	8.8	7.5	7.9	0.78
Surgical/IR interventions pre-procedure (no.)	10	6	10	0.15
Primary patency (years)	0.7	0.4	1.1	0.65
Secondary patency (years)	1.7	1.8	1.91	0.95
Hospital stay following index procedure (days)	3.7	1.3	1.4	0.19
Subsequent procedures to maintain patency (no.)	**4.4**	**0.25**	**1.4**	**0.02**
Hospital stay for access related complications (days)	18.5	11	15	0.35
Infections (no.) AV graft/THL	**0.5**	**2.25**	**1.6**	**0.01**
Dialysis adequacy (Urea reduction ratio)	71.1	73.1	71.6	0.54
30-day mortality (no.)	0	0	2	-

Half of the patients in HeRO group underwent 2 or more SVC venoplasty/stent placement procedures. HeRO group required significantly more procedures to maintain access patency when compared to the other groups (p 0.02), however other groups have significantly fewer patients. Differences in secondary patency, duration of in-patient stay and dialysis adequacy was not significantly different between the three groups.

The HeRO group was associated with significantly lower number of infections compared with the other two groups (p 0.01). The 30-day mortality was noted only in the sharp recanalization group with 2 deaths.

Conclusion: These procedures are complex and high risk, needing multiple interventions to maintain access, as noted in our study which found it to be significantly higher in the HeRO grafts. Incidence of infections is significantly high in the patients with THLs. Despite the complex nature, the secondary patency rates were acceptable for all cohorts. There is a need for better patient education to move away from THL dependence as SVC recanalization is associated with significant mortality and in our study 4 out of 9 patients that underwent this procedure were under the age of 60 (2 were under 45).

P91

Evaluation of a mobile phlebotomy service for transplant patients shielding during the Covid-19 pandemic

Dr Julia K Banks, Ms Sarah Lundie, Dr Wendy Metcalfe, Ms Jenny Moxom, Mr Gabriel C Oniscu, Ms Melanie Phillips, Ms Mette Tranter, Dr Robert W Hunter

Edinburgh Transplant Unit, Edinburgh, United Kingdom

Introduction: The Covid-19 pandemic disrupted the routine care of kidney transplant recipients due to the closure of many outpatient clinics. Almost one in ten patients with kidney disease reported being completely unable to obtain blood tests (KidneyCare UK Survey). Access to blood testing was a major source of anxiety for many patients and their families. We sought to implement and evaluate an emergent mobile, patient-centred phlebotomy service to enable safe blood testing for patients shielding during the 1st wave of the Covid-19 pandemic (April – July 2020).

Methods: We repurposed a van that had previously been used to deliver community immunisations, to offer a mobile phlebotomy service to kidney transplant recipients in South-East Scotland. Working with Ordinance Survey, we mapped the location of patients to determine optimal testing sites. Our nurse-led clinic took blood tests from up to 20 patients per day, maintaining appropriate social distancing. We evaluated attendance rates and patient feedback using a structured questionnaire. We also sought feedback from referring clinicians.

Results: 370 appointments were offered in 32 clinics. 12 (3%) patients did not attend for their allotted appointment. 96 patients completed a feedback questionnaire. 93% were “very satisfied” with their experience; 100% said that they would use the service again in future. Blood results made a significant difference to the management of many patients, including picking up a case of antibody-mediated rejection that would otherwise have been missed.

Discussion: Our mobile phlebotomy service enabled us to provide kidney transplant recipients with uninterrupted access to blood tests during the first wave of the Covid-19 pandemic. Our approach was highly-valued by patients and made a meaningful difference to clinical management. Despite this, the service was restricted to blood testing alone. Therefore, Monitoring Clinics which ultimately replaced the service provided a more comprehensive patient assessment, allowing weight and blood pressure measurements along with urinalysis.

P92

Working collaboratively with tissue and eye services

Miss Sonya Paterson[1], Mrs Kirstie Johnston[2], Mrs Cathy Miller[3]

[1]NHS Blood and Transplant, Newcastle Upon Tyne, United Kingdom. [2]NHS Blood and Transplant, Liverpool, United Kingdom. [3]NHS Blood and Transplant, Birmingham, United Kingdom

Introduction: As part of NHS Blood and Transplants (NHSBT) organisational restructure Organ Donation and Tissue and Eye Services (TES) are now working closer together as part of the same directorate - Organ and Tissue Donation and Transplantation (OTDT). The Legislation Change Team (LCT) recognised the importance of working collaboratively with TES to enable success within the opt-out project and a consistent approach to building, testing and delivering training which would ensure all consenting staff would be able to apply Deemed Consent in May 2020 as per the Organ Donation (Deemed Consent) Act 2019.

Methods: Members of the TES team were involved in the creation and training delivery of the final module for the legislation change training for Specialist Nurses (SN) and the development of Consent quality documents. Whilst the law change is a historical event, it doesn't encompass all aspects of consent and it is essential for us to continue to work on all aspects of consent whilst embedding this change such as advanced communication skills, training of new specialist nurses and the facilitation of donation from those excluded from deemed consent. During the embedding of the legislation there has been the opportunity to share practice afforded through the debriefs regarding potential deemed consent conversations.

Outcome: This has enabled us to work even more closely and further increase alignment and consistency in our practice, learning from one another and sharing best practice.

Discussion: The debriefs have highlighted a skill set that OTDT SNs share, whilst also identifying areas to learn new skills from each service. TES SNs are skilled with building a rapport very quickly over the telephone which have become more prevalent for OTDT during the COVID 19 pandemic. As virtual communications develop, these are being embraced within the NHS, highlighting the need to further share skills.

P93

COVID19 resilience: recipient and living donor co-ordinator virtual induction 2020

Mrs Lisa Burnapp[1,2], Ms Sadie Von Joel[1], Mrs Jen Lumsdaine[3], Mrs Bethan Thomas[1], Mrs Laura Stamp[1], Mrs Maria Kelly[1]

[1]NHSBT, London, United Kingdom. [2]Ther British Transplantation Society, London, United Kingdom. [3]Royal Infirmary of Edinburgh, Edinburgh, United Kingdom

Introduction: The recipient and living donor co-ordinator induction is an established annual event facilitated by NHS Blood and Transplant (NHSBT) and the British Transplantation Society (BTS). Usually held over 2 days this is an opportunity for newly appointed co-ordinators from all organ groups to network, share experiences and provide professional support, alongside learning about a range of topics pertinent to transplantation from donor management to ethical considerations. COVID 19 restrictions meant that the 2020 meeting could not go ahead as originally planned.

Case presentation: A working group was formed including the co-ordinator leads, a specialist nurse in organ donation and administrative support to identify how the induction could continue whilst adhering to restrictions imposed by COVID 19. A 2 day virtual meeting via Zoom was proposed and following consultation with co-ordinators to assess interest, 1/2nd October 2020 was agreed. The group met regularly to agree a programme and speakers. A Zoom licence was secured, and a meeting link communicated with delegates.

Outcome: 22 delegates registered for the induction with all attending via Zoom on both days. An evaluation of the event was collected anonymously with almost all presentations receiving a minimum of 4 (good)/5 (excellent) rating. The induction overall was rated as excellent. It was highlighted however, that the opportunity to visit the Hub and other areas in NHSBT were not compensated by virtual talks, as with the networking opportunities.

Discussion: Continuing to hold this event for co-ordinators proved, that despite the challenges of COVID 19, virtual educational meetings can provide a valuable alternative to face to face meetings, allowing ideas to be shared and clinical practice debated. The success of this induction shows that virtual platforms can have a place in future events. We hope in the future to provide a blended learning opportunity when restrictions allow.

P94

Supporting an UHAS registered inpatient during COVID-19

Monika Krupa, Gillian Wright, Lisa Steadman, Sarah Pethurst

Royal Papworth Hospital NHS Foundation Trust, Cambridge, United Kingdom

Introduction: In March 2020, the UK government response to COVID-19 (SARS-CoV-2) pandemic affected NHS services including organ transplantation[1]. At a Cardiothoracic Transplant Centre an inpatient depended on inotropic support was awaiting urgent heart transplant. Patient's safety and optimal physical and psychological well-being became paramount aspects of his care during lockdown.

Case presentation: A 53-year-old male was admitted in December 2019 for optimisation of decompensated heart failure non-responsive to pharmacological therapy. Continuous inotropic support ensured stable end-organ function and he was escalated to urgent heart allocation scheme. Amidst the hospital preparations for COVID-19 surge an individually directed care plan was initiated. It incorporated three separate, yet interlocking aspects:

- COVID-19 management strategy: single room capacity, segregation of areas to COVID and non-COVID, strict no-visiting policy and reduction in outpatient and inpatient movement to mitigate the risk of virus exposure.
- Patient's physical condition – physiotherapy was crucial to minimise and prevent physical deconditioning.
- Psychological well-being – concentrated, but not exclusively, on cognitive stimulation and family support. Occupational therapy interventions were invaluable throughout admission and especially during lockdown. Adhering to guidelines (and collaborating with other services) they organised games and projects (see pictures), family visits, and charity events.


(pic.1)

(pic.2)

However, lack of inpatients interaction in the single-room environment with strict infection control precautions became apparent. Shared individual experience of care is recognised to improve patients' well-being[2].

Outcome: Patient underwent heart transplant at the end of July 2020 and was discharged 16 days later. Individually directed physical and psychological support enabled swift discharge. Furthermore, no abnormal physical or mental health concerns were raised to date.

Discussion: Supporting individual needs of the pre-transplant inpatient throughout lockdown with innovative ideas whilst adhering to COVID-19 restrictions ensured safe and effective recovery. However, further work is needed to investigate feasibility of utilising social platforms within NHS setting to assist with patients' integration.

P95

Increasing engagement with external stakeholders through the use of appreciative inquiry

Miss Megan Reid

NHS Blood and Transplant, Glasgow, United Kingdom

Introduction: To acknowledge the vital role our regional Microbiology/H&I labs and the Procurator Fiscal service do, the Scotland Organ Donation Team have used the concept of appreciative inquiry by sending biannual thank you letters to the lab staff and Procurator Fiscal. These letters highlight how many occasions they have been involved in the donation process, how many organs have been transplanted and ultimately how many lives have been saved. They are accompanied by donor family and recipient letters to show the very real impact donation and transplantation has.

Case presentation: This initiative started out as a way to say thank you to our colleagues who had assisted in the donation process. We have found that a simple letter has a significant impact on the staff who receive them and highlights the crucial role they play.

Outcome: The feedback from the lab and Procurator Fiscal staff has been remarkable. They have stated how much they appreciate the letters, how positively they are received, and how moved they are by the difference their work has made. In addition, the Procurator Fiscal service informed the Lord Advocate and Cabinet Secretary for Justice of the letters, resulting in a press release being issued which highlighted the excellent partnership working between the Crown Office Procurator Fiscal Service and NHS Blood and Transplant. This included a link to the Organ Donation website, emphasising how to sign up to the register.

Discussion: Taking the time to send these letters has helped us build upon our relationship with the labs and the Procurator Fiscal. It has encouraged support of the donation service, and even throughout the COVID pandemic, both the labs and Procurator Fiscal have gone above and beyond to support donation. This could be replicated throughout the UK to increase engagement with a range of stakeholders.

Work of the Procurator Fiscal has helped save lives during the pandemic

Crown Office and Procurator Fiscal Service staff have been thanked for their work in contributing to the life-saving organ donation process during the first months of the coronavirus pandemic.

NHS Blood and Transplant Scotland Organ Donation Services Team have acknowledged the significant part that the Scottish Fatalities Investigation Unit (SFIU) plays in the organ donation process in helping to ensure that donation wishes are fulfilled.

During the first three months of the pandemic COPFS has given consent for nine donations to proceed in compliance with the wishes of the deceased and their family. This led to 31 lives being saved as two hearts, two pairs of lungs, nine livers and 18 kidneys were all able to be transplanted.

Laura Mundell, Head of the Scottish Fatalities Investigation Unit, said:

"Every day we investigate sudden and unexplained deaths, working with other agencies to provide answers and hopefully some closure for families. We know that where there is support for donation it means a lot to families to ensure that that donation can proceed.

"We continue to do that work now. Adapting to the challenges the pandemic brings, our team are working from home as well as in offices in Glasgow, Edinburgh, Dundee, Aberdeen and Inverness to make a difference.

"It is truly gratifying to hear that the part we play in the organ donation process helps provide new hope and fresh beginnings for so many transplant recipients, as well as comfort for donor families."

Susan Hannah, Regional Manager for the NHS Blood and Transplant Scotland Organ Donation Services Team said:

"We are all aware of the significant impact the COVID 19 pandemic has had on all aspects of our lives. Despite these challenges consent was given for organ donations that led to 31 lives being saved.

"I would like to thank COPFS for their help and support in giving consent for organ donations to proceed and allowing the transplant of organs throughout the United Kingdom.

"We truly appreciate the contribution to giving transplant recipients hope at a time of great uncertainty."

"We are also very thankful to the families who support organ donation from their loved ones as without them Organ Donation would not be possible"

ENDS

Notes to Editors

From 01 December 2019 until 30 June 2020 SFIU gave consent for organ donations on 31 different occasions. This has led to 73 organs being retrieved for life saving transplants including, 4 hearts, 3 pairs of lungs, 42 kidneys, 20 livers, 3 pancreases and 1 small bowel.

From 01 April 2020 to 30 June 2020 SFIU consent was given for 9 donations to proceed.

This led to 31 lives being saved as 2 hearts, 2 pairs of lungs, 9 livers and 18 kidneys were all able to be transplanted.

The SFIU is involved in donation where there are sudden and unexplained deaths and through strong joint working with NHSBT it has enabled donation to go ahead in such cases, whilst ensuring that such deaths are able to be properly investigated.

In these circumstances, and where donation has been authorised, consent from the SFIU is required for donation to proceed.

You can sign up as an organ donor at https://www.organdonationscotland.org/

P96

A novel approach to left ventricular assist device (LVAD) education

Ms Jayne Bancroft, Mr Marius Berman, Mr Sai Bhagra, Mr Richard Quigley

Royal Papworth Hospital, Cambridge, United Kingdom

Objective: Responding to the current challenges of the Covid 19 pandemic has led of the requirement of a novel education program for the nursing staff caring for Left Ventricular Assist Device patients (LVAD). This training package will provide a comprehensive guide with a clear pathway for learning ensuring nursing staff who have been redeployed to unfamiliar areas due to Covid 19 will be able to care for LVAD patients maintaining safety and competence, with the possibility of a second wave to build resilience within the team.

Method: Nursing staff employed on the ward and ICU are briefly introduced to the care of the LVAD patient in their induction program. Ongoing care is heavily supported by the VAD and Transplant team. Once developed they will provide a robust training platform compromising of newly developed competencies, training booklet, videos and weekly hands on equipment management. The video based educational program is an effective means of instruction allowing paced learning, visual text for improved retention and combined with other tools becomes an innovative cost effective means to educate.

Results: The implementation of this educational tool will enable ward nursing staff to assist in the discharge preparation leading to shorter lengths of hospital stay and decreasing complications requiring re-admission. This venture can also be extended to educating services within the community. Sharing these resources with GP practices and local hospitals where the patient may be admitted for non LVAD related clinical issues.

Summary: A consequence of the current Covid 19 pandemic has forced nurse educators to be more flexible and creative in terms of maintaining nurse competence in a specialised field such as MCS. Training environments have to allow for social distancing, cleaning of equipment after hands on training and educating fewer people at once. This practice has the ability for staff to be educated at their own pace and to re visit the training resources at any time, maintaining an effective flexible program to meet current educational needs.

P97

Liver transplantation for hepatocellular carcinoma beyond Milan criteria: early results of the UK HCC down-staging service evaluation

Ms Rhiannon Taylor[1], Mr James Powell[2], Ms Elisa Allan[1], Dr James Ferguson[3], Dr Victoria Snowdon[4], Dr Ian Rowe[5], Dr Abid Suddle[6], Professor Derek Manas[7], Professor Douglas Thorburn[8], Dr Aileen Marshall[8]

[1]NHS Blood and Transplant, Bristol, UK. [2]Edinburgh Royal Infirmary, Edinburgh, UK. [3]Univeristy Hospitals Birmingham, Birmingham, UK. [4]Addenbrookes Hospital, Cambridge, UK. [5]St James Hospital, Leeds, UK. [6]King's College Hospital, London, UK. [7]Freeman Hospital, Newcastle Upon Tyne, UK. [8]Royal Free Hospital, London, UK

Introduction: Current UK liver transplant (LT) selection criteria for hepatocellular carcinoma (HCC) are a modification of Milan Criteria,[1] aiming to select patients with favourable tumour biology and hence good outcome following LT. However, some patients outwith standard selection criteria have favourable biology and could benefit. A UK consensus conference[2] agreed to evaluate and validate HCC down-staging, utilising selection criteria developed by Duvoux[3]. This service evaluation was implemented in all UK liver transplant centres in 2015.

Methods: Patients were eligible to be considered for LT meeting these criteria: HCC outwith standard UK criteria, downstaged within Duvoux criteria (table 1), ≥6 months from down-staging treatment to imaging determining within criteria, ≥3 months from first imaging within criteria. Review by two independent radiologists was required. Exclusion criteria were macrovascular invasion, extra- hepatic HCC or any accepted absolute contraindication to LT. Local or systemic anti-cancer therapies could be used to achieve downstaging. Outcome measures were 2- and 5-year disease-free survival and overall survival.

Results: Between March 2015 and November 2020, 48 patients were listed for LT under downstaging criteria. 42 patients received LT, 41 received a deceased donor liver (24 DBD, 17 DCD) and one live donor transplant. 5 patients were removed from the waiting list, 3 due to deterioration in their condition. Median follow up was 365.5 days (range 0-1599). Of the 41 patients receiving a deceased donor transplant, 38 remain alive, 2 have died (at 38 days and 1599 days post transplant). No follow up information was available for 1 patient transplanted in October 2020.

Conclusion: Implementation of a downstaging protocol has increased access to LT for HCC patients with no evidence of inferior survival compared to standard criteria. Five- year disease free and overall survival endpoints have not been reached. The UK Liver advisory group has agreed to keep the service evaluation open.

Table 1. Criteria for listing following "down-staging" treatment (Duvoux et al[3].) Patients with a score ≤2 after downstaging are eligible to be considered for LT.

Variable	Points
Largest diameter (cm)	
≤3	0
3-6	1
>6	4
Number of nodules	
1-3	0
≥4	2
AFP (ng/mL)	
≤100	0
100-1000	2
>1000	3

P98

Biliary stricture are associated with both early and late hepatic artery stenosis

Mr Angus Hann[1,2], Ms Rashmi Seth[3,4], Mr Hynek Mergental[1], Mrs Hermien Hartog[1], Dr Arie Stangou[1], Dr Omar El-Sharif[1], Dr James Ferguson[1], Mr Keith Roberts[1], Professor Paolo Muiesan[1], Professor Ye H Oo[1,2], Mr John Isaac[1], Professor Darius Mirza[1,1], Mr Thamara Perera[1]

[1]The Liver Unit, Birmingham, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom. [3]The Liver unit, Birmingham, United Kingdom. [4,2] The Pfleger Liver Institute, Los Angeles, USA

Introduction: Hepatic artery stenosis (HAS) following liver transplantation results in hypoperfusion of both the intra and extrahepatic biliary tree and results in ischaemic damage. This study aimed to investigate how vascular intervention, liver function test derangement and time point of HAS onset impacts the incidence and prognosis of biliary complications.

Methods: A single center retrospective study of adult patients that underwent a primary liver transplant between January 2007 and December 2017 with a deceased brain death donor (DBD) graft was performed. Patients were grouped according to the presence or absence of HAS and then into early (diagnosis <90 days) or late (>90days) subgroups and biliary complications were defined as either anastomotic (AS) or non-anastomotic strictures (NAS). Measured outcomes were AS, NAS, biliary intervention, graft loss and mortality and the relationship of these outcomes in the context of liver function test (LFT) derangement and vascular intervention.

Results: Of total of 1232 primary DBD liver transplants, 39 patients (3.2%) had CTA confirmed HAS (Table 1). This occurred at ≤90d and ≥90d in 20 (1.6%) and 19 (1.5%) respectively. The incidence of biliary strictures (BS) in the group with HAS was higher than the group without (13/39; 33% vs 85/1193;7.1%, p=0.01). BS occurred in 8/20 (40.0%) and 5/19 (26.3%) of the early and late HAS groups respectively. The need for surgical or endoscopic biliary intervention was significantly greater if any LFT result was ≥ 3 x upper limit of normal (p=0.019) (Table 2).

Discussion: BS occur at a significantly higher rate in the presence of HAS. Onset of HAS at ≤90d or ≥90d can both be associated with morbidity; significant LFT derangement at HAS diagnosis indicates a higher likelihood of requiring biliary intervention for strictures.

Table 1: Demographic, donor and surgical details of study patients

	Total sample		Patients with HAS	
	HAS	No HAS	HAS ≤ 90d	HAS ≥ 90d
Number of patients	39	1193	20	19
Female	10 (26.3%)	480 (40.2%)	3 (15%)	7 (36.8%)
Age - Years	49.5 (28-70)	52 (16-75)	48 (31-58)	54 (29-70)
UKELD score†	55 (44-72	55 (17-80)	55 (46-70)	53 (44-72)
Indication for transplant (%)				
Alcoholic liver disease	9 (23.1)	269 (22.5)	3 (15)	1 (5)
Hepatitic C cirrhosis	6 (15.4)	161 (13.5)	2 (10)	4 (20)
Primary Sclerosing cholangitis	6 (15.4)	130 (10.9)	5 (25)	1 (5)
Hepatitis B cirrhosis	2 (5.1)	26 (2.2)	1 (5)	2 (10)
Primary biliary cirrhosis	4 (10.3)	107 (9.0)	2 (10)	2 (10)
NAFLD cirrhosis	2 (5.1)	99 (8.3)	1 (5)	1 (5)
Seronegative hepatitis	4 (10.2)	73 (6.1)	2 (10)	1 (5)
Drug induced liver failure	2 (5.1)	49 (4.1)	–	–
Cryptogenic cirrhosis	2 (5.1)	31 (2.6)	1 (5)	1 (5)
Polycystic liver disease	–	36 (3.0)	–	2 (10)
Other	2 (5.1)	212 (17.8)	3 (15)	4 (25)
Donor age - Years	44 (14-77)	45 (7-84)	44.5 (14-68)	43 (22-77)
Surgical variables (%)				
CIT (min)	515 (123-805)	469 (60-1205)	551 (123-765)	510 (127-372)
Split graft	5 (12.8)	141 (11.8)	3 (15)	2 (10.5)
Multiple arterial anastamoses	6 (15.4)	149 (12.5)	2 (10)	4 (21.1)
Duct to bowel anastomoses	8 (20.5)	159 (13)	4 (20)	4 (20.1)
T - tube	2 (5.1)	83 (7)	0 (0)	2 (10.5)

HAS; Hepatic artery stenosis, UKELD; United Kingdom model for end stage liver disease, NAFLD; Nonalcoholic fatty liver disease CIT; Cold ischaemic time
† UKELD at time of transplant. Available for 81% of subjects

Table 2: HAS severity, complications and interventions

Time of HAS onset	Liver function tests	Vascular intervention	Type	cor
HAS diagnosed ≤ 90 days (n=20)	Normal	2	2 An, St and Em	
	Elevated ≤ 3xULN	7	1 Su	
	Elevated ≥ 3 xULN	11	2 An, An	
HAS diagnosed ≥ 90 days (n=19)	Normal	7	4 Em, An, An, St	
	Elevated ≤ 3xULN	6	2 An, Emb	
	Elevated ≥ 3 xULN	6	3 An, St and Emb	

ULN; Upper limit of normal, An; Angioplasty, St; Hepatic artery stent Em; Embolisatio
Su; Surgical reconstruction, AS; Anastomotic stricture, NAS; Non-anastomtic stricture
*Biliary reconstruction folowing multiple ERCPs
†Biliary reconstruction following failed ERCP
‡ ERCP attempted twice but unsuccessful, decision made for conservative manageme

Categories

Clinical - liver and intestinal (liver - small bowel - surgery - transplant hepatology - recipient clinical care and management)

P99

The evaluation and clinical correlation of frailty measures in a prospective national cohort of liver transplant candidates

Dr Sinead Cremen[1], Dr Mark Robinson[2], Prof Diarmaid Houlihan[3], Mr Tom Gallagher[1]

[1]Department of Hepatobiliary and Transplant Surgery, St Vincent's University Hospital, Dublin, Ireland. [2]Department of Biology, Maynooth University, Kildare, Ireland. [3]Department of Hepatology, St Vincent's University Hospital, Dublin, Ireland

Introduction: Frailty is a clinical condition characterised by a loss of physiologic reserve and increased susceptibility to stressors. The American Society of Transplantation recommended routine frailty assessments for all solid organ transplant recipients. The aims of this research were to assess the prevalence of frailty in those referred to the Irish Liver Transplant Program and assess its impact on outcomes.

Methods: 70 patients were prospectively evaluated while undergoing liver transplant assessment. Frailty assessments included Liver Frailty Index (LFI), Fried Frailty Index (FFI), and Rockwood Frailty Score (RFS) and standardised sarcopenia measurements. Assessments were repeated at 3-monthly intervals whilst wait-listed. Clinical outcomes included decompensation-related hospitalisations, time on the waiting-list, post-transplant ICU- and overall-length of stay, 30-day mortality and morbidity post-transplant.

Results: 20% were found to be frail when assessed by LFI and RFS, 37% using FFI. Baseline demographics (sex, age, MELD-Na) were similar across frail and non-frail groups. There was a significant difference in frailty in patients with Child-Pugh A/B vs C (FFI p=0.003, LFI p=0.054). While waitlisted, frail patients showed a trend towards increased admissions with decompensations compared to non-frail patients (70% vs 29.4%, p=0.057). Frailty increased while on the waitlist, but the frailest patients spent a significantly shorter period on the waiting list, due to transplantation or death (Median 22 days (frail) vs 95 days (non-frail), p= 0.026).

Discussion: Frail patients portended towards a worse stage of liver disease and were admitted to hospital more frequently with decompensation, but spent less time on the waiting list. This adds objectivity to what was previously a nuanced aspect of patient selection at the time of donor offer. This study supports the use of objective frailty assessment in a national liver transplant cohort.

P100

Retransplantation in the normothermic machine perfusion era

Mr Hanns Lembach Jahnsen, Ms Oana Anisa Nutu, Ms Hermien Hartog, Mr Thamara Perera

The Liver Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom

Introduction: Retransplantation (RT) is a complex surgical endeavour. As complex recipient hepatectomies and longer cold ischaemia times are expected, retransplant candidates are frequently considered only for optimal DBD grafts. Recently, normothermic machine perfused (NMP) grafts have been increasingly used on retransplant candidates, improving utilisation of standard and extended criteria grafts.

Methods: Retrospective review of retransplant procedures done in our institution from 2007 to 2020. Data including recipient characteristics, operative details, post-operative morbidity and follow-up was collected. Analysis comparing outcome of retransplants using NMP and Standard cold storage (SCS) grafts was carried.

Results: Of 175 retransplants performed in this period, 28 utilised machine perfused grafts. Gender distribution was similar in both groups. NMP patients were significantly younger (median 36.5 vs 44.5) and primary sclerosing cholangitis was more frequent as base disease. Pre transplant UKELD was similar in both groups (table1). Regarding indication for retransplant, chronic rejection was more frequent in the NMP group, whilst primary non-function and hepatic artery thrombosis were more frequent in the SCS group, without reaching significance. Cold ischaemia time (median 363 vs 469 min, $p<0.001$) and implantation time (median 22 vs 34 min, p 0.02) were significantly shorter in machine perfused grafts, whilst no differences in total operative time or transfusion requirement were observed. Early allograft disfunction, rejection and post-operative fluid collections were more frequent in the NMP group (table 2). On Kaplan-Meier analysis, survival for NMP vs SCS grafts is 96.2% vs 84.3% at 12 months, and 96.2% vs 76.6% at 24 months. This difference did not reaching statistical significance (Log-rank 0.112).

Conclusion: Adoption of NMP technology for retransplantation safely enables the use of declined grafts, improving access to suitable organs for this group of patients. Surgical teams can also benefit from extended preservation time, shorter CIT and logistic flexibility to help improve outcomes.

Table 1: Characteristics of patients retransplanted using NMP and SCS preserved grafts.

	NMP (n=28)		SCS (n = 147)		P value
Age at RT (Median/Range)	36.5	18-69	46.5	16-70	0.042
Gender (n/%)					
Male	15	53.6%	72	49.3%	0.837
Aetiology (n/%)					
ALF	4	14%	29	20%	ns
ArLD	4	14%	18	12%	ns
PSC	11	39%	29	20%	0.012
PBC	1	4%	16	11%	ns
Viral Hepatitis	0	0%	19	13%	ns
AIH	2	7%	13	9%	ns
Cause for Retransplant (n/%)					
CR	7	25%	18	12%	0.07
PNF	1	4%	25	17%	0.06
HAT	6	21%	47	32%	0.25
Biliary complications	6	21%	22	15%	0.40
Disease recurrence	6	21%	19	13%	0.24
Time on waitlist (Median/range)	7	0-34	1	0-37	<0.001
Super-Urgent RT (n/%)	2	7%	53	37%	0.002
MELD pre-RT (median/range)	17	"6-30"	20	"6-42"	0.01
UKELD pre-RT (median/range)	57	46-67	57	19-75	0.35
Donor Risk Index (median/range)	1.60	1.06-2.25	1.63	1.07-2.98	0.70

Abbreviations: RT: Retransplant, ALF: Acute Liver Failure, ArLD: Alcohol related liver disease, PSC: Primary Sclerosing Cholangitis, PBC: Primary Biliary Cirrhosis, AIH: Autoimmune Hepatitis, CCR: Chronic Rejection, PNF: Primary non-function, HAT: Hepatic Artery Thrombosis. MELD: Model for end Stage Liver disease, UKELD: UK model for end stage liver disease.

Table 2: Operative details and post-operative morbidity after retransplant using NMP and SCS preserved grafts.

	NMP (n=28)		SCS (n=147)		P value
Retransplant operation details (median/range)					
CIT	363	181-575	469	82-900	<0.001
RBC Transfusion	4	0-30	5	0-47	0.48
Implantation Time	22	11-145	34	18-60	0.03
Op Time	337	210-780	351	170-744	0.56
Morbidity (n/%)					
PNF	0	0%	2	1%	0.53
EAD	13	46%	37	26%	0.04
RRT	14	50%	65	46%	0.68
Rejection	17	61%	45	33%	0.009
Re-Laparotomy	4	14%	24	17%	0.75
Fluid Collections	5	19%	12	9%	0.008
Post op Bleeding	2	7%	15	11%	0.74
ITU stay (median/range)	4	1-50	4	1-60	0.57
LOS (median/range)	17.5	6-85	20	1-105	0.92

Abbreviations: CIT: Cold Ischaemia time, RBC: red blood cells, OP time: Operative time, PNF: Primary non-function, EAD: Early Allograft Disfunction, RRT: Renal Replacement Therapy, ITU: Intensive Treatment Unit, LOS: Length of stay.

P101

Safety of intraoperative blood salvage during liver transplantation in patients with hepatocellular carcinoma, a propensity-score matched survival analysis

Anisa Nutu[1], Dimitri Sneiders[2], Virginia J. Aijtink[2], Vera C. Rutten[2], Beatrice E.M. Meijer[2], Irene Scalera[1], Vassil Myhailov[1], Thamara Perera[1], Hermien Hartog[1]

[1]The Liver Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom.[2]Dept of Surgery, Erasmus Medical Center, Rotterdam, Netherlands

Introduction: Intraoperative blood salvage (IBS) reduces the use of allogeneic blood transfusion. However, safety of IBS during liver transplantation (LT) for hepatocellular carcinoma (HCC) is questioned as it may increase the risk of HCC recurrence due to re-infusion and dissemination of malignant cells. Objective of this study is to assess the safety of IBS in a propensity score matched cohort.

Methods: HCC patients who underwent LT between 2006 and 2019, with a minimum follow-up of 12 months, were included. Multiple imputation was performed to compensate for missing data. Subsequently propensity score matching was performed. The following variables were included in the propensity score model: sex, age, primary liver disease, BMI, Milan status (at listing), pre-LT loco-regional treatment, donor type, donor BMI, donor risk index, complete pathological response, positive lymph nodes, number and cumulative size of viable tumours, micro and macro vascular invasion, and tumour grade. After matching, disease free survival (DFS) was compared in Kaplan-Meier curves and with univariable cox regression. Time to HCC recurrence was compared with competing risk regression (CRR) considering the risk for mortality from other causes.

Results: Data on 185 HCC patients were available who underwent LT for HCC and received IBS, 134 cases could be propensity score matched (1:1) to patients who had not received IBS. Propensity score matching resulted in a well-balanced sample. IBS did not negatively impact DFS (HR 1.23, 95%CI: 0.83-1.82, p=0.31) nor the risk for HCC recurrence (CRR HR: 0.87, 95%CI 0.45-1.67, p=0.67). After 5 years of follow-up the cumulative percentage of patients alive without HCC recurrence were 63%*vs.* 68% (p=0.30) in patients with IBS and no-IBS, respectively (Figure 1).

Discussion: Use of IBS during LT did not increase the risk for HCC recurrence. IBS is a safe procedure in HCC LT recipients to reduce the need for allogenic blood transfusion.

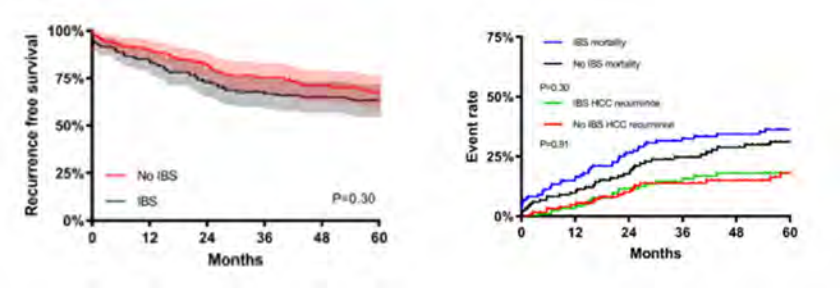


Figure 1a. Kaplan-Meier curve of 5-year disease free survival. 1b. Figure 2, Incidence of mortality and HCC recurrence,

Legend: P for log-rank test

P102

DCD liver transplantation and cholestatic autoimmune liver diseases – an incompatible combination?

Ahmed E Sherif[1,2], Timothy Kendall[3,4], Gabriel C Oniscu[1,2]

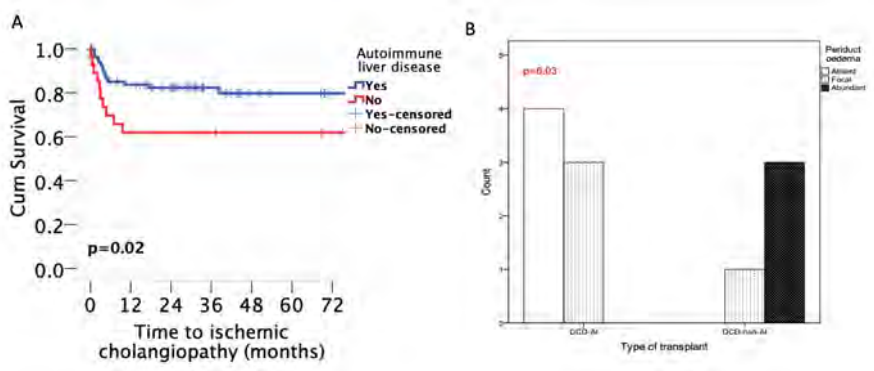
[1]Edinburgh Transplant Centre, Edinburgh, United Kingdom. [2]Clinical Surgery, University of Edinburgh, Edinburgh, United Kingdom. [3]Institute of Genetics and Molecular Medicine, Edinburgh, United Kingdom. [4]Department of Pathology, NHS Lothian, Edinburgh, United Kingdom

Background: Patients with primary sclerosing cholangitis (PSC) can benefit from donors after circulatory death (DCD) liver grafts, however, previous studies showed that graft survival appeared to be inferior. In experimental models, prolonged ischemia augmented grafts alloimmune injury through several innate immunogenic pathways. The aim of the study was to explore the clinical outcomes of DCD liver transplantation for cholestatic autoimmune liver diseases [PSC, primary biliary cirrhosis (PBC) and autoimmune hepatitis (AIH)].

Methods: Data on DCD liver transplant recipients and matched DBD controls were retrospectively collected in a UK liver transplant centre (2005-2019). Primary endpoints were graft survival and incidence of ischemic cholangiopathy (IC) in patients transplanted with DCD grafts for autoimmune liver indications (DCD-AI). Explant pathology analysis of the failed grafts requiring re-transplant for IC was undertaken.

Results: 114 DCD liver transplants (34 DCD-AI) and 43 DBD liver transplants for autoimmune indications were identified. Graft loss and IC (Fig. A) appeared to be significantly higher in the DCD-AI group (p=0.05 and p=0.02 respectively). Explant pathology showed a comparable distribution of hilar mural/luminal inflammation, hilar luminal fibrosis, portal duct presence and duct inflammation among groups. Peri-ductal oedema appeared more focal and abundant in the DCD- non-AI group, p=0.03 (Fig. B).

Discussion: Autoimmune liver diseases are associated with a significantly higher incidence of graft loss in the DCD cohort, which is attributed to increased incidence of IC development in this group. Further mechanistic experimental studies are warranted to investigate this relationship.



P103

De novo bronchiectasis in transplant recipients develop mainly in patients exposed to Mycophenolate mofetil

Dr Caroline Dudreuilh, Dr Martha Alvarez Nadal, Dr Nathan Hayes, Dr Dimitrios-Anestis Moutzouris

Renal Department, Guy's and St Thomas' NHS Foundation Trust, LONDON, United Kingdom

Introduction: Bronchiectasis is a rare, acquired condition, generally resulting from chronic pulmonary inflammation or recurrent infections (1,2). In transplant recipients, mycophenolate mofetil (MMF) has been reported as a risk factor for bronchiectasis in small case series (3,4).

Methods: We conducted a retrospective analysis of patients who developed Bronchiectasis following kidney and kidney-pancreas transplantation.

Results: Between 1980 and 2018, out of 2300 patients who received a kidney or a simultaneous kidney and pancreas transplantation and followed-up at Guy's, 21 patients developed de novo bronchiectasis after transplantation (Table 1). Bronchiectasis developed within a median time of 3.2 years (0.9-29.7) after transplantation and the majority of the patients were receiving MMF (86%). MMF was stopped or the dose was reduced in 1/3 patients and resulted in clinical improvement without additional treatments.

Discussion: Bronchiectasis can develop after kidney transplantation. Although its association with MMF exposure remains to be determined, it seems that MMF discontinuation has led to clinical improvement.

Patients' characteristics		**n=21**
Gender, male/female		14/7
Age at transplantation, years		41 (10-72)
Number of transplants 1/2/3		13/6/2
Time transplant to bronchiectasis, years		3.2 (0.9-29.7)
MMF		
Exposition to MMF, Yes/No		18/3
Time MMF to bronchiectasis, years		1.9 (0.9-29.7)
MMF	Stopped, n (%)	7 (33)
	Stopped because of bronchiectasis, n(%)	5 (71)
	Reduced because of bronchiectasis, n(%)	1 (14)
	Improvement of bronchiectasis after stop/diminution, n (%)	3 (50)
Transplant refers to the most recent transplant before diagnostic of bronchiectasis		

1. Magis-Escurra, *BMJ Clin Evid,* 2015 ; 2. Dury, *BMC Pulmonary Medicine*, 2015 ;
3. Rook, *Transplantation* 2006 ; 4. Boddana, *Clin Transplant* 2011

P104

A quality improvement project to improve dermatology follow up and patient understanding of cutaneous malignancy risk related to immunosuppression post renal transplantation

Dr Dominic Maxfield[1], Dr Rachel Davison[1], Dr Sarah McCloskey[1], Dr James Andrews[1], Miss Tsu Yau Tiffany Tang[2], Mr Eleftherios Gkekas[2]

[1]South Tyneside and Sunderland NHS Foundation Trust, Sunderland, United Kingdom. [2]Newcastle University, Newcastle upon Tyne, United Kingdom

Introduction: Immunosuppressed patients post-transplantation have a higher cumulative incidence of cutaneous malignancy compared to the general population [1]. The British Transplant Society (BTS) recommends that patients undergo skin surveillance in a dermatology clinic on a biannual basis for the first five years post-transplant and annually thereafter [2]. In our unit, dermatology services are provided by two other Trusts which can result in communication difficulties and create barriers to appropriate care.

Methods: Sunderland Renal Unit oversees 289 transplant patients. We audited the proportion of patients with documented evidence of dermatological surveillance as per BTS guidance. We then liaised with partner Trusts to confirm any patients who were under observation but not documented in our records. All other patients were referred for follow up as per recommendations. Moreover, the presence of malignant or pre-malignant lesions, time from transplant to diagnosis and consequent alteration of immunosuppression was collated.

Results: The initial audit suggested that 21% of patients had documented follow up for skin surveillance. A further 30% had been referred but were awaiting review (due to the COVID19 pandemic). Alternative parameters, as outlined above, are still under analysis at time of submission.

Discussion: Given the discovery of our poor compliance with guidelines, we undertook a quality improvement project. A new patient education leaflet was generated, promoting self-examination and awareness. The leaflet is offered to every patient on return to the unit post-transplantation. All patients without pre-arranged follow up have now referred for assessment. Early review of patients not yet seen resulted in potentially sinister lesions being urgently referred (as warranted). A spreadsheet was developed to ensure that standards are maintained, with clear documentation of when patients were last seen, the incidence of lesions and whether or not immunosuppression has been adjusted. This has generated a robust system for the referral and monitoring of our patient cohort.

References

1. Moloney, F., Comber, H., O'Lorcain, P., O'Kelly, P., Conlon, P. and Murphy, G., 2005. A population-based study of skin cancer incidence and prevalence in renal transplant recipients. *British Journal of Dermatology*, 154(3), pp.498-504.
2. British Transplant Society – Clinical Practice Guidelines, 2017. "Post-Operative Care in the Kidney Transplant Recipient", page 12 [Accessed Online 22/11/2020 at https://bts.org.uk/wp-content/uploads/2017/06/FINAL_PostOperative_Care_Guideline.pdf]

P105

Managing UTIs in renal transplant recipients during a pandemic

Mrs Sophie Emmerson[1], Mrs Asia Imedi[2], Dr Mark Harber[1], Dr Stephen Mepham[1], Miss Fiona McCaig[1]

[1]Royal Free Hospital, London, United Kingdom. [2]Royal London Hospital, London, United Kingdom

Introduction: Since setting up a dedicated transplant UTI clinic in 2018 we have undertaken ~300 consultations. The recent pandemic created an unprecedented situation whereby we had to radically change our practice. We did not cancel any outpatient clinics during the pandemic but managed patients virtually via telephone or video consultation. This was challenging as many staff were re-deployed to other areas within the hospital, including ITU. The priorities were keeping transplant patients safely at home, preventing admissions due to urosepsis and diagnosing and treating infections at an early stage.

Methods: During the period 27/2/20 – 2/10/20 n=126 transplant UTI consultations were undertaken. Initially the consultations were held over the telephone. The first video consultation was undertaken in early June via the NHS platform 'Attend Anywhere'. Text messages were sent to patients informing them not to attend in person and that the consultation would occur via a platform of their choice – either telephone or video conference. Patients were given a direct link to 'AttendAnywhere' via text message. Following the consultation those patients at high risk of UTI were sent an emergency pack containing an information sheet with instructions to follow if they developed symptoms. The pack also contained a sterile urine collecting tray, 2 x boric acid universal containers and a prescription for home start antibiotics. Patients were instructed to commence home start antibiotics immediately after the MSU (mid stream urine) was obtained (before the microbiology results were available). Patients who developed symptoms before obtaining a pack could be met at the front door of the hospital and given an MSU pack and empirical antibiotics (according to sensitivities from previous sensitivities). All patients received a patient information sheet with direct contact details for the transplant UTI team. No patients were taken off antibiotic prophylaxis during this period.

Conclusions: Transplant UTI clinics were undertaken throughout the pandemic. They occurred via telephone or video consultation. The consultation rate was close to 100% as patients were shielding at home and therefore easily contactable. MSU packs and home start antibiotics were given to high risk patients. There were no known admissions with graft pyelonephritis during the first COVID-19 wave. This could be due to the early management of transplant UTIs in the outpatient setting.

P106

Integration of transplant ureteric stent removal into transplant clinic follow up during the Covid-19 pandemic

Miss Hannah Magowan[1], Mr Dave Rae[2], Mr Stephen O'Neill[1]

[1]Belfast City Hospital, Belfast, United Kingdom. [2]M.E.D Surgical, Dublin, Ireland

Introduction: There has been a surge in deceased donor kidney transplant activity within Northern Ireland in the first phase of the Covid-19 pandemic. One of many measures to help minimise early re-operative interventions and pressure on wider systems has been a routine policy of prophylactic transplant ureteric stenting. However, restricted elective theatre capacity has resulted in loss of day procedure lists for cystoscopic transplant ureteric stent removal. In addition, the need for social distancing has reduced outpatient capacity for transplant follow up. This has created a logistical dilemma for both transplant ureteric stent removal and outpatient follow up. This study describes the integration of transplant ureteric stent removal using the Isiris single use flexible cystoscope into routine transplant clinic follow up, and considers the cost implications of this new pathway.

Methods: Stent removals were performed at the same time as routine follow up appointment in the transplant outpatient clinic by a single transplant surgeon. An existing health care assistant supported the surgeon. No additional space or staffing was required. Prophylactic intravenous antibiotics were administered when taking routine blood tests. A cost comparison of the new pathway (£250 per patient) was made with the cheapest quote for cystoscopy (£1,100 per patient) available from local independent sector providers.

Results: 96 patients underwent attempted transplant ureteric stent removal in the outpatient clinic. Two patients required onward referral for stent removal under sedation after failed procedures. The success rate of stent removal in the outpatient clinic was 98%. The total cost of the new pathway was £24,000. The cost in the independent sector would have been £105,600. Therefore introducing the new pathway has made a cost saving of £81,600.

Discussion: The integration of transplant ureteric stent removal into transplant clinic follow up during the Covid-19 pandemic has proved feasible and has resulted in significant cost savings.

P107

Renal transplantation into an ileal conduit, inverted or conventional positioning?

Mr Noah Howes, Mr John Fallon, Mr Sam Turner, Mr Jay Nath, Mrs Anusha Edwards, Mr Shakeeb Khan

Southmead Hospital, Bristol, United Kingdom

Introduction: Renal transplant in patients with an abnormal lower urinary tract is rare[1,2,3]. An ileal conduit presents a unique challenge for both the vascular and ureteric anastomoses. Inverted graft implantation has been described, but is unusual. Complication rates in this group remain high, with surgical and infection related complications the most common[3,4,5]. We present our single centre experience with renal transplantation in patients with an ileal conduit.

Methods: Six patients with ileal conduits underwent renal transplantation in our centre from 2017 to 2020. Three kidneys were placed in a conventional orientation, and three were inverted to create a shorter and more direct route for the ureter from the kidney to the conduit. All vascular anastomoses were on to the external iliac artery and vein. All ureteric anastomoses were stented, three were on to a Wallace conduit, three on to an end-to-side conduit.

Results: All patients had a single ureter, two had duplicate arteries, and one had duplicate veins. There were no vascular complications. Of the conventionally positioned group, one required return to theatre for repositioning related to a ureteric kink following a migrated stent, one had cellular rejection, and one has required long-term ureteric stenting. Of the inverted group, one required a nephrogram, but ultimately did not require intervention, the other two suffered no complications. All grafts are functioning well to date.

Conclusion: Inverted placement of a renal allograft has been previously described, but remains rare[2]. We, in our limited series, have found inversion of the renal allograft a successful technique with a reduction in our ureteric complications and no increase in vascular complications in patients with an ileal conduit.

1. Coosemans W, Baert L, Kuypers D et al. Renal transplantation onto abnormal urinary tract: ileal conduit urinary diversion. Transplant Proc 2001
2. Surange RS, Johnson RW, Tavakoli A et al. Kidney transplantation into an ileal conduit: a single center experience of 59 cases. J Urol 2003
3. Hatch DA, Belitsky P, Barry JM et al. Fate of renal allografts transplanted in patients with urinary diversion. Transplantation 1993
4. Tzardis PJ, Gruessner RW, Matas AJ et al. Long-term follow-up of renal transplantation for Wegener's disease. Clin Transplant 1990
5. Glass, N. R., Uehling, D. T., Sollinger, H. and Belzer, F.: Renal transplantation using ileal conduits in 5 cases. J Urol, 1985

P108

Maintenance of a deceased-donor kidney transplantation program during the 2020 SARS-CoV-2 pandemic

Mr Richard Dumbill[1], Mr Srikanth Reddy[2], Mr Zeeshan Akhtar[2], Mr Venkatesha Udupa[2], Dr Ben Storey[2], Mr James Gilbert[2], Ms Isabel Quiroga[2], Mr Simon Knight[2], Ms Andrea Devaney[2], Dr Martin Bernardo[2], Dr Thomas Connor[2], Dr Udaya Udayaraj[2], Dr Paul Harden[2], Dr Edward Sharples[2], Dr Phil Mason[2], Prof Rutget Ploeg[1], Prof Peter Friend[1], Mr Sanjay Sinha[2]

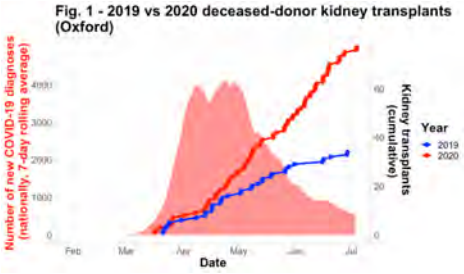
[1]University of Oxford, Oxford, United Kingdom. [2]Oxford University Hospitals NHS Foundation Trust, Oxford, United Kingdom

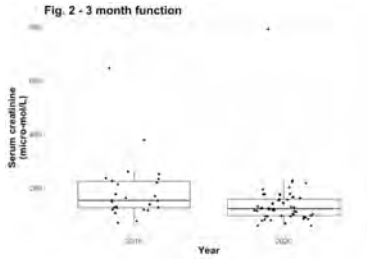
Introduction: SARS-CoV-2 has profoundly affected organ transplantation worldwide. The adverse effects of suspension of routine care during the pandemic are increasingly being recognised. A small number of transplant centres kept operating throughout the first wave – including Oxford. It is not known a) whether transplant programs should be continued or suspended in such circumstances; or b) if they are continued, what changes are necessary at a centre-level to make transplantation safe.

Methods: Changes made to transplant practice in Oxford, centre activity, and detailed baseline recipient, donor, operative, and follow-up data were recorded contemporaneously. Equivalent data concerning a historical cohort were collected retrospectively. Outcomes up to three months post-transplant were compared to assess transplant outcomes and safety.

Results: The first wave was defined as 16/03/2020– 04/07/2020. Changes to transplant practice included recipient risk stratification and immunosuppression modification. 77 patients underwent deceased-donor kidney transplantation at the Oxford Transplant Centre vs 34 in the same period in 2019 (Fig. 1). Cold ischaemia times were longer (14h20 vs 11h45, $p<0.05$) and donor risk index was lower (1.02 vs 1.029 $p<0.01$). Length of stay was comparable (4.8 vs 4.2 days), as was DGF incidence (29% vs 41%), DGF persisting beyond initial discharge (11% vs 29%), and complications leading to readmission (21% vs 20%). The rate of early biopsy-proven rejection was 6/57 vs 1/29. All grafts were functioning at three months; function was comparable (serum creatinine 142 vs 188 µmol/l, Fig. 2). One patient in the 2020 cohort was diagnosed with COVID-19.

Discussion: Deceased-donor renal transplantation is safe during pandemic SARS-Cov-2, with appropriate recipient and donor selection. Decrease in donor risk index mitigated longer cold ischaemic times, caused by reorganisation of anaesthetic services. Change from alemtuzumab to basiliximab induction may have been over-cautious, and led to an increase in early rejection.





P109

The impact that COVID-19 can have on a kidney transplant programme

Miss Catherine Boffa[1], Dr Katey Flowers[1], Mr Omar Aly[1], Dr Samuel Robson[2], Miss Kelly Bicknell[3], Miss Ashleigh Hale[3], Dr Sharon Glaysher[4], Dr Angela Beckett[2], Mr Rupesh Sutaria[1], Dr Mark Uniacke[1], Mr Paul Gibbs[1], Mr Keith Graetz[1]

[1]Wessex Kidney Centre, Queen Alexandra Hospital, Portsmouth, United Kingdom. [2]University of Portsmouth, Portsmouth, United Kingdom. [3]Medical Microbiology, Queen Alexandra Hospital, Portsmouth, United Kingdom. [4]Research and Innovation, Queen Alexandra Hospital, Portsmouth, United Kingdom

Introduction: COVID-19 caused a global pandemic. Several case reports and observational series have documented differing outcomes in transplant patients. We describe the outcome in the last seven patients receiving a kidney transplant prior to our programme closure in March 2020.

Methods: Between 13/02/2020-11/03/2020 we performed seven kidney transplants. All patients were managed on the same ward for their index admission. We closed our transplant ward to visitors on 11/03/2020 and suspended our live and deceased donor transplant programs on 18/03/2020 and 22/03/2020. The clinical course of these patients was retrospectively reviewed and SARS-CoV-2 viral genome sequencing was conducted on all patients that tested positive for COVID-19 using the ARTIC protocol and Oxford Nanopore GridION sequencing.

Results: All seven transplant patients tested positive for COVID-19 between 16/03/2020 and 06/04/2020. Table 1 shows patient demographics. Three patients died, another developed T-Cell mediated rejection, requiring graft nephrectomy but survived. Two patients were admitted and managed with ward-based care. One patient was managed as an outpatient. Two SARS-CoV-2 lineages were identified in these patients; B and B.1.11. The majority of Single Nuclear Polymorphisms (SNPs) are shared amongst samples from the same lineage. The B lineage was found in all three patients who died, the patient requiring graft nephrectomy and the patient managed as an outpatient all who had overlapping inpatients stays. The B.1.11 lineage was found in the other two patients who were both outpatients when they tested positive.

Conclusions: If COVID-19 is found on a transplant ward it can have devastating effects as we have seen. Older or obese patients that had the B lineage seemed to have worse outcomes. The shared SNPs within each lineage suggests nosocomial transmission of COVID-19 in these patients.

Table 1. Demographics/outcomes of recipients.

Age/Sex	Comorbidities	Ethnicity	BMI	Dialysis	Donor	COVID positive	SARS-CoV-2 Lineage	Outcome
55F	Anti-phospholipid-syndrome Hypertension DM	Black-African	40	PD	DBD	16/03/20	B	Died
52F	DM	White	39	HD	DBD	20/03/20	B	Died
68F	COPD Hypertension	White	22	PD	LURD	31/03/20	B.1.11	IP management
50M	None	White	25	Pre	LRD	10/04/20	B.1.11	IP management
51M	Cardiac surgery Pacemaker	White	23	HD	DCD	02/04/20	B	OP management
73M	Bronchiectasis	White	31	HD	LURD	03/04/20	B	Died
73M	Hypertension	White	26	HD	DBD	23/03/20	B	Graft-nephrectomy

P110

Reducing face to face outpatient visits for renal transplant patients….virtually impossible?

Louise Kipping, Grainne Walsh, Nick Ware, Helen Jones

Guys and St Thomas' Hospital, London, United Kingdom

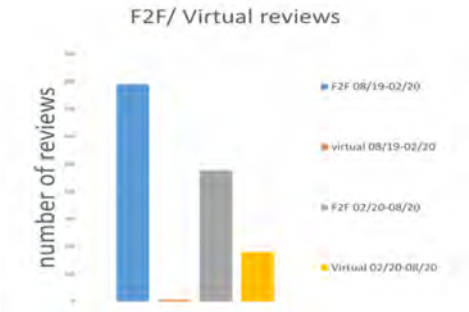
Introduction: For half a century, paediatric renal transplant recipients (pRTRs) have been exclusively followed up in face to face (F2F) clinic in our teriary centre. During the COVID-19 global pandemic adaptations were made to minimise travel/exposure for all pRTRs in the high risk category (on the shielding list) by re-structuring the clinic and utilising local services, where possible, for monitoring traditionally carried out by the tertiary centre. A virtual (video) transplant clinic overseen by the paediatric transplant team was developed.

Methods: Retrospective review of the F2F versus virtual pRTR outpatient follow up appointments in the cohort 6 months before the COVID-19 pandemic (01.08.2019-01.02.2020) and 6 months into it (02.02.2020-01.08.2020) in a single paediatric tertiary nephrology centre. Postal packs to enable immunosuppression drug level and viral load monitoring were developed in conjunction with laboratory colleagues.

Results: 92 pRTRs under follow up included in the study. Figure 1 shows the number of outpatient appointments. Due to COVID-19 the transplant program was suspended for a period where no new pRTRs were added to the cohort until the end June 2020. Median number of reviews per pRTR was 5 F2F and 0 virtual before and 3.5 F2F and 2 virtual during the pandemic. To facilitate the virtual reviews pRTRs had monitoring blood tests, anthropometry, blood pressure and urinalysis at the tertiary centre (57%), in primary care (15%), children's community nursing team (14%) and at their local hospital (12%).

Conclusion: Developing a virtual transplant clinic enabled a reduction of F2F visits during the COVID-19 pandemic. We hope to further develop this service by strengthening our links with local services as well as empowering pRTRs and their families to carry out some of their own monitoring (weight, blood pressure, urinalysis and finger prick blood tests) in the home environment and evaluate the outcome including patient feedback of these changes.

Figure 1



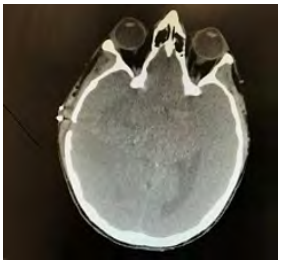
P111

A brain biopsy for donation: a successful MDT approach saves 4 lives

Miss Stephanie Russell, Miss Tamara Vega, Miss Sofia de Jesus Marques Ribeiro, Mr Shalom Rey Lumanlan, Miss Aisling Mc Intyre

London Organ Donation Services Team, NHS Blood and Transplant, London, United Kingdom

Introduction: Transplantation medicine faces ongoing complex challenges to secure organs for transplant. Innovative and novel multidisciplinary strategies are required in order to maximise the number of donation opportunities. We present a case where these strategies led to a successful multi organ retrieval despite the challenges of having an organ donor with a brain tumour.



Case presentation: A 45-year-old female, no past medical history, was admitted to ED with a 1/52 history of headaches, vomiting and photophobia. Images showed a right temporal lobe lesion with associated mass effect, midline shift and hydrocephalus. Appearances were suggestive of a glioblastoma multiforme. Due to an acute neurological deterioration, she was taken to theatres for a temporal burr hole aspiration of a neoplastic cystic component. Subsequently, a diagnosis of death was made by neurological criteria. The patient had registered on the organ donor register and her family were comforted by the opportunity for the patient to help save and improve the lives of other people.

Outcome: This case highlights a significant medical barrier to organ retrieval as the lesion did not have a confirmed diagnosis. A biopsy was obtained for neuro-histopathology which was processed and formally reported by a tertiary neurology centre confirming the diagnosis of glioblastoma. Organ donation proceeded leading to successful transplantation of abdominal and cardiothoracic organs.

Discussion: This process can only be achieved with effective communication and MDT collaboration to overcome the inevitable restraints in the context of a publicly funded healthcare system with limited resources. A willingness to achieve a goal that extended beyond their own responsibilities, such as cancelling an elective neurosurgery and neuropathologists working beyond their hours the London Organ Donation team has demonstrated how it took a team of all specialities to get to the goal of a successful transplant and more importantly, achieving the wishes of the donor and their family

P112

WHO surgical check list: still another tick box exercise. Results from a closed loop audit at a medium sized transplant centre

Dr Harry Cross, Mr Hemant Sharma, Dr Nicklas Brown, Dr Avinash Odugoudar, Dr Bhavesh Devkaran, Mr Abdul Elmghrbee, Miss Oreoluwa Bajomo, Miss Virginia Ledda, Mr Dan Ridgway, Mr Abdel Hammad, Mr Ajay Sharma, Mr Sanjay Mehra

Royal Liverpool University Hospital, Liverpool, United Kingdom

Background: The evidence of quality teamwork achieving reduction in adverse events is overwhelming. Our previous audit presented in 2014 showed that the WHO Surgical Check-list information is sub optimally retained post operatively at renal transplant and vascular access lists at our center.

Aim: We re-audited the study to quantitatively assess if there have been changes in the practice since.

Methods: Theatre staff including surgeons, nurses and anesthetists were randomly asked question about the patient, surgical procedure performed and staff information post operatively as discussed prior to surgery in accordance to the WHO Check list in the last 54 operative sessions. The staffs were unaware of the snap shot survey, in order to minimize Hawthorne phenomena.

Results: The Check Lists were religiously read in 100 % operations (N= 54) in all domains (Before anesthesia induction- ***Check in***; Before skin incision – ***Time out***; Before patient leaves theatre – ***Sign out***). There was statistical improvement in identifying the patient and the key surgical individuals from the previous audit (table 1) yet staff were unable to identify side and site of operation in 1/10 cases, and the name of the procedure in 2/10 cases.

Question	Aware -2014 (%)	Aware-2020 (%)	Not Aware – 2014 (%)	Not Aware – 2020 (%)	p- value
Name/ID of the Patient	12/30 (40%)	32/54 (59%)	18/30 (60%)	22/54 (41%)	< 0.01
Name of Surgeon	11/21 (52%)	39/54 (72%)	10/21 (48%)	15/54 (28%)	< 0.01
Name of the First Surgical Assistant	07/16 (43%)	12/54 (22%)	09/16 (57%)	42/54 (78%)	< 0.01
Name of Anesthetist	09/15 (60%)	36/54 (66%)	06/15 (40%)	18/54 (34%)	0.42
Name of Scrub Nurse	17/22 (77%)	41/54 (75%)	05/22 (23%)	13/54 (25%)	0.57
Side/site of operation (asked post operatively)	9/11 (81%)	49/54 (89%)	02/11 (19%)	5/54 (11%)	0.33
Name of the operation	17/21 (81%)	44/54 (81%)	05/21 (19%)	10/54 (19%)	0.75
Sponge count	22/22 (100%)	54/54 (100%)	-	-	1
Labeling of the specimen	19/21 (90%)	6/7(85%)	02/21 (10%)	1/7(15%)	0.19

Table 1: Results of the Snap Shot WHO Checklist Audit 2020

Conclusions: Even though the checklist was read in 100% operations, the information was not retained by the staff in 2/10 cases. There has been significant improvement in WHO information retain but still improvement is needed.

P113

Barriers to living kidney donation: a survey of perceptions and attitudes of potential kidney transplant candidates and kidney transplant recipients

Dr Syed Hasan Ahmad, Dr Mohammad Siouda, Dr Hassan Diab, Dr Divya Premchandran, Dr Brian Camilleri

East Suffolk and North Essex NHS Foundation Trust, Ipswich, United Kingdom

Introduction: A living donor kidney transplant is the preferred treatment of choice for patients with end-stage renal failure. However, potential recipients may find it difficult to initiate conversations with potential donors. The purpose of this study is to identify and explore perceptions and attitudes that may lead to these barriers.

Methods: We surveyed kidney transplant recipients (KTR) and potential transplant recipients (PTR) at the Ipswich Hospital. A questionnaire was designed to assess various domains as follows: preference, knowledge, willingness, concern, health literacy and social support, together with basic demographics (age, occupation, religion, and gender). Questionnaires were anonymous and distributed between April and September 2019. 109 replies were received out of a total of 404 surveys.

Results: Of the total respondents, 81 were KTRs and 28 PTRs. Of the 81 KTRs, 55 (68%) had a deceased donor kidney and 26 (32%) had a live donor kidney. 36% of respondents preferred a live kidney over a deceased kidney. 63% would not ask a person to donate a kidney to them. However, 77% said they would accept the offer if a living donor offered them their kidney. 52% of respondents showed concerns for living donor health post-donation. Majority were comfortable asking for help if they had a problem, were health literate and had good support from friends, family and a special person in their lives.

Discussion: Overall, our cohort of patients had good health literacy, good social support and willingness to seek help. The majority would accept the offer of a living kidney but were reluctant to initiate a conversation with potential living kidney donors mainly due to concern for donor health. Future studies are needed to understand the difficulties patients requiring a kidney transplant face. In the meanwhile, the transplant community should facilitate these discussions.

P114

The impact of service improvement project on living kidney donor programme in a single centre

Caroline Basarab-Horwath[1], Debbie Butlin[1], Veronica Lennon[1], Lisa Hamilton[2], Kevin Firth[1], Ceris Harrison[1], Mr Ravi Pararajasingam[1], Mr Yazin Marie[1]

[1]Sheffield Kidney Institute, Sheffield, United Kingdom. [2], Sheffield Kidney Institute, United Kingdom

Introduction: Within the NHS, making changes to improve a service can be challenging: time, staff workload, team engagement, communication, technical skills and finance. Service Improvement (SI) project is a successful framework that supported, guided and helped the living donor team break down these barriers and improve the service.

Methods: The team uses microsystem improvement methodology to assess, diagnose and treat the existing service. This involved engaging team members in a structured process to improve the quality of care for patients and staff. Weekly meetings, supported by a trained improvement coach, maintain focus on the themes for improvement. The team then used improvement tools such as process mapping and Plan Do Study Act (PDSA) cycles to test their improvements. The meetings provide a platform for feedback 'what went well, what went badly.' They also provide the team with a wider perspective of the hospital structure and opportunities to make connections with other services within the trust.

Results: The attached figure summarises the main achievements of the SI project so far.

Discussion: SI model takes the approach of deciding the aim and objectives and makes use of data by analysis and continuous review. We presented here the huge achievements made through this programme since its introduction. It is essential that SI maintains consistence and coherence with effective use of data and should involve patients, service users and carers in order to flourish. As SI was already embedded in our practice, we were able to react rapidly to the challenging environment of the Covid-19 crisis where weekly meetings continued over Microsoft Teams® and supported a new adapted service.

P115

Postoperative outcome of hand-assisted laparoscopic donor nephrectomy – a small retrospective study

Mr Vikrant Thakur, Ms Minahi Ilyas, Mr Mohammed Khurram, Mr Mohamed Ismail, Mr Benjamin Lindsey, Mr Rajesh Sivaprakasam, Mr Vassilis Hadjianastassiou

Royal London hospital, London, United Kingdom

Introduction: Laparoscopic donor nephrectomy has become the standard procedure for live kidney donation for renal transplantation, based on faster recovery, less postoperative pain and early return to work. However the impact of kidney donation on the donor in the short and long term needs to be analysed. This article aims to study short and long term impact of donor nephrectomy on the donor.

Methods: This was a retrospective study of prospectively collected data from 100 consecutive patients who underwent laparoscopic trans abdominal donor nephrectomy since January 2016. The primary aim of the study was to find the short and long term impact of nephrectomy at 1 month and 1 year post-donation. Renal function was assessed based on the serum creatinine level.

Results: Out of 100 patients who were included in the study 34 were female. Mean age was 42.15 years,mean BMI was 25.8. 78 donor nephrectomies were left sided. Mean preoperative creatinine level was 0.97mg/dl ,postoperative creatinine at 1 month ,1 year were 1.06 md/dl and 1.07 mg/dl .A total of 8 patients had wound infection in the immediate post operative period which resolved with medical therapy. Two patients had post operative collection in retroperitoneal region with one requiring ultrasound guided drainage and another resolved conservatively. One patient had intraoperative urinary bladder injury. Two patients developed post operative incisional hernia which subsequently required surgery.4 patients reported back pain 3 years post surgery and attributed it to the surgery itself. There was no intraoperative or post operative mortality.

Conclusion: Laparoscopic donor nephrectomy was safe for these donors with minimal morbidity, comparable to the National reported rates.

P116

First DCD heart retrieval in Northern Ireland region

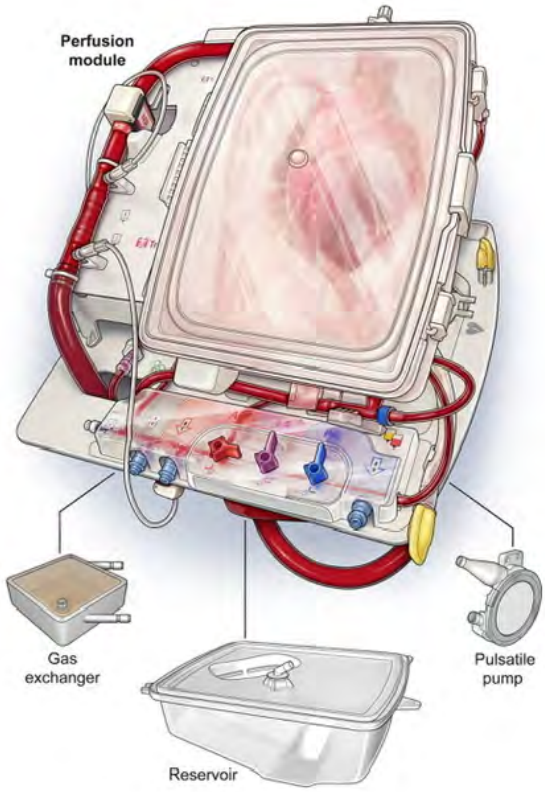
SNOD/SR Edel Livingstone, SNOD/SR Jacqueline Heasley, SNOD Mary Hayes

Northern Ireland Organ Donation Services Team, Belfast, United Kingdom

The DCD Heart UK wide retrieval and transplantation 12 month pilot was launched on 7th September 2020. Within less than two weeks into the pilot launch, a patient in an ICU in Northern Ireland met the potential DCD heart referral criteria.

A consequence of the pandemic was that there had been no previous planning in place to facilitate the very specific requirements for this type of novel donation in the region. Specifically in relation to withdrawal of life sustaining treatment in theatre, request of investigations such as ECHO out of hours and permission/negotiation for family to be present at end of life care outside of the ICU environment. A culture currently not in place in the region.

The Northern Ireland Organ Donation services team (NIODST) demonstrated, leadership, boldness and resilience to challenge the 'usual' processes in order to support the decision of the family and maximise the opportunity for DCD heart donation to potentially take place. The ICU and theatre teams based at Belfast City Hospital (the region's renal transplant centre) equally responded with enthusiasm and a desire to show the NHS, particularly donation and transplantation at its best. They worked collaboratively with the NIODST and changed their usual donation processes to facilitate the retrieval. A teenaged boy received a heart transplant after a short wait on the transplant waiting list, a successful achievement for the region. A National DCD debrief provided feedback and commented on the level of professionalism from all staff involved. The clinical case study will be invaluable for shared practice and learning to ensure the continued success of the pilot scheme throughout the region of Northern Ireland.


Perfusion module
Gas exchanger
Reservoir
Pulsatile pump

P117

C-reactive protein and urea blood levels distinguish primary non-function from early allograft dysfunction after liver transplantation

Dr James Halle-Smith[1], Mr Lewis Hall[1,2], Mr Angus Hann[1,2], Mr Keith Roberts[1,2], Ms Hermien Hartog[1], Mr Thamara Perera[1]

[1]Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom. [2]University of Birmingham, Birmingham, United Kingdom

Introduction: A spectrum of graft dysfunction occurs following liver transplantation (LT), ranging from early allograft dysfunction (EAD) to primary non-function (PNF). EAD is common and requires organ support until graft function improves, whilst emergency re-transplantation is required for cases of PNF. The aim of this study was to determine whether serum markers can distinguish PNF from EAD early after liver transplantation.

Methods: We performed a retrospective study of adults that underwent deceased donor LT at our institution between January 2010 and April 2020. PNF was defined as graft dysfunction resulting in death or retransplant within 14 days, not explained by any other cause. EAD was defined as bilirubin ≥177 umol/l on day 7, and/or AST or ALT >2000 IU/L within the first 7 days. Individuals with PNF were also grouped according to whether they died or survived within 90 days, with or without a re-transplant. Biochemical results were compared between EAD and PNF patients, then between the PNF subgroups.

Results: Out of 1907 LTs performed, n=341 (17.9%) and n=34 (1.8%) patients developed EAD and PNF, respectively according to our definition (Table 1). In the first 2 postoperative days, urea, CRP, fibrinogen and platelet values were significantly lower in the PNF group (Table 1), while day 1 levels of bilirubin and ALT did not discriminate well between the two groups. The absence of an increase in urea levels between day 1 and day 2 was significantly apparent in PNF compared to the EAD group. The change in urea from day 1 to day 2 distinguished PNF non-survivors from the survivors (*P*=0.02) (Table 2).

Discussion: Differences in urea and CRP are evident earlier than the commonly used measures of ALT and bilirubin. Therefore, clinicians should also consider taking these markers into account when making treatment decisions for patients on the liver allograft dysfunction spectrum.

Table 1

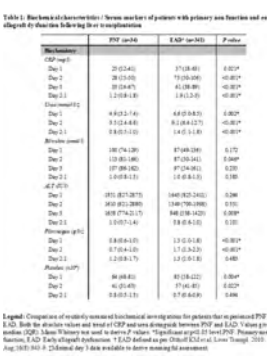
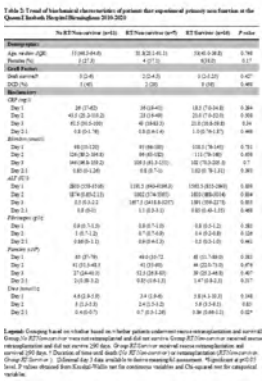


Table 2



P118

Use of avascular rectus abdominus fascia for abdominal closure in transplantation

Miss Irum Amin, Mr Neil Russell, Mr Paul Gibbs, Prof Christopher Watson, Ms Sarah Peacock, Mr Andrew Butler

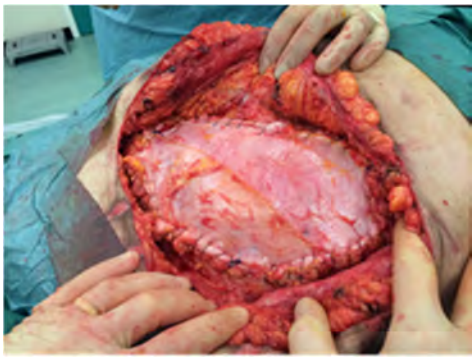
Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

Introduction: One of the many challenges managing intestine-containing graft recipients is the loss of abdominal domain and subsequent closure. Use of avascular rectus fascia (ARF) results in expansion of the abdominal domain and allows use of larger donors. It leads to a tension free abdominal closure to reduce the risk of compartment syndrome. This experience can be translated to facilitate abdominal closure in liver and kidney transplantation (primary or secondary due to sepsis or herniae)

Methods: ARF is retrieved at the time of deceased-donor organ retrieval via a midline incision. Skin and subcutaneous fat are mobilised laterally to expose rectus sheath, which is removed en bloc with the muscle. ARF is then packed & stored in UW and ice. The fascia is prepared by removing subcutaneous fat and rectus muscle belly to leave anterior and posterior sheath.

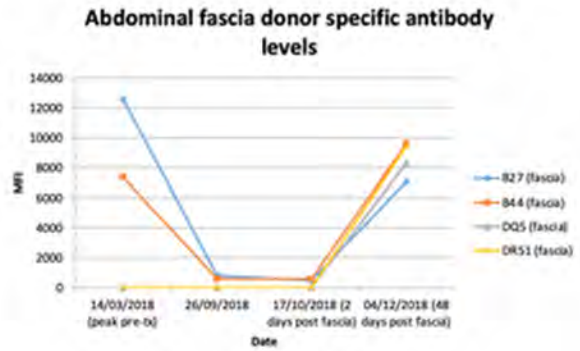
Results: Since October 2013, ARF was used to facilitate abdominal wall closure at our centre in 38 patients. 31 intestine-containing transplants, 5 liver and 2 kidney transplant recipients. Follow-up range is 2 months - 7 years.

Vascularisation of the ARF occurs early with minimal adhesions at re-laparotomy (fig1).



It can be used in the presence of sepsis, after bowel perforation or enter-cutaneous fistulae. ARF exhibits versatility & strength as it can be removed and re-implanted and no incisional herniae have developed. Stomas can be formed at the junction of the donor and native fascia. Complications include eschar and slough formation and dehiscence at the suture line with the native fascia. There has been one case of CMV transmission in a liver/small bowel transplant recipient.

Use of ARF results in the occurrence of de novo DSA against the fascia (fig 2).



Discussion: ARF is cost-effective & versatile. It has facilitated the primary closure of approx 45% of intestine containing grafts and allowed the use of larger donors (in an already limited donor pool). This **experience can be applied to liver transplant recipients, potentially** expanding the **donor pool for** super-urgently **listed patients. ARF can be used to treat** incisional herniae **in kidney** transplant recipients, but has the potential to sensitise patients for further transplants. Future work involves increasing the current storage time from 48 hours to 2 weeks (in conjunction with vessels) to expand its usage and potential processing to lose immunogenicity.

P119

Validation of the Hepatocellular carcinoma tumor burden score (TBS) as a predictor factor of recurrence and survival after liver transplantation

Anisa Nutu, Hanns Lembach Jahnsen, Angus Hann, Hassaan Bari, Tahir Shah, Shishir Shetty, Hermien Hartog, Thamara Perera

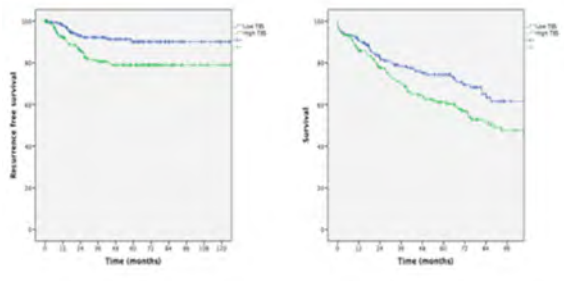
The Liver Unit, Queen Elizabeth Hospital, Birmingham, United Kingdom

Introduction: Liver transplantation (LT) is an established treatment for hepatocellular carcinoma (HCC) patients. Tumor burden score incorporates tumor number and size into a single algorithm and has been successfully validated to differentiate prognosis among patient undergoing resection for HCC and as a predictive score of outcomes after LT for HCC. Our aim was to validate this score in our cohort.

Methods: A retrospective analysis was performed in a single center where patients with an HCC listing diagnosis were transplanted during 2006-2020. Tumor burden score was defined following Sasaki algorithm and for each patient the maximum tumor diameter and the number of tumors were obtained from the histopathology report of the explanted liver. TBS was then categorized after median was obtained, in low TBS and high TBS and this was assessed in the recurrence free survival (RFS) and overall survival (OS) curves and in the Cox regression logistic.

Results: During the study period 401 HCC recipients were transplanted. TBS AUC was 0.627, achieving a significative association with the OS ($p<0.05$) and the recurrence ($p<0.05$). Median TBS was 3.60, categorizing TBS in low and high. All low TBS patients were within the Milan criteria and 60% of the high TBS group were outside the Milan criteria in the explant. Performing Kaplan Meier curves, patients with a high TBS had less survival (p=0.013) and higher recurrence than those with a low TBS (p=0.005) (graphic 1). In the Cox proportional Hazard analysis, a high TBS was associated with a greater HR of recurrence (HR=2.390, 95%CI 1.279-4.466, p=0.006) and death (HR=1.552, 95%CI 1.094-2.202, p=0.013).

Discussion: In our cohort tumor burden score is a predictive factor for recurrence and overall survival. This is an easy score to calculate and may open a pathway for future surveillance in patients with a high score after the transplant.



Graphic 1. Kaplan Meier curves regarding 1a) Recurrence free survival with high or low TBS

1b) Overall survival with high and low TBS

P120

Systematic review of interventions to prevent thrombosis in solid organ transplant recipients

Mr Thomas Hoather[1,2], Mr Vignesh Surianarayanan[1], Dr Samuel Tingle[1,2,3], Dr Emily Thompson[1,2,4], Dr John Hanley[1,5], Prof Colin Wilson[1,2,4]

[1]Newcastle University, Newcastle Upon Tyne, United Kingdom. [2]Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, United Kingdom. [3]NIHR Blood and Transplant Research Unit, Newcastle Upon Tyne, United Kingdom. [4]Institute of Transplantation, Freeman Hospital, Newcastle Upon Tyne, United Kingdom. [5]Department of Haematology, Newcastle Upon Tyne Hospitals NHS Foundation Trust, Newcastle Upon Tyne, United Kingdom

Introduction: Graft thrombosis is one of the leading causes of early graft failure following organ transplantation. Certain patients are known to be at higher risk of thrombosis either because of pre-existing conditions (e.g. portal vein thrombosis, Budd-Chiari) or complex surgical vascular reconstruction. Currently there are no national standardized protocols for thromboprophylaxis (TPX) in solid organ transplant recipients.

Methods: We searched the Cochrane Kidney and Transplant Specialised Register using relevant terms for RCTs. Two authors reviewed the identified studies. The primary outcomes were graft thrombosis and major haemorrhagic events. Statistical analyses were performed using RevMan and results expressed as relative risk (RR).

Results: 9 RCTs (7 kidney/2 liver) were included in our analysis. There were no high-quality studies, and most studies were at high risk of bias. In renal transplantation (7 studies; 544 participants) only two graft thromboses were reported across all studies, providing no meaningful data on effectiveness of TPX. In kidney transplantation there was evidence that IV heparin may increase the risk of major bleeding events compared to placebo (2 studies, 105 participants, RR=3.33, 95% CI 1.04-10.67, P=0.04; Figure 1), but this represents low certainty evidence. In liver transplantation we identified 2 studies (168 participants). One showed no benefit of warfarin versus aspirin in patients with pre-transplant portal vein thrombosis. The other (n=28) investigated plasmapheresis and anticoagulation in patients with antiphospholipid antibodies, but was only available as a conference abstract and was high risk of bias. There were no randomised trials identified in pancreas or cardiothoracic transplantation.

Discussion: Evidence to guide TPX strategies in solid organ transplantation is scarce. It is unclear if any therapy reduces graft thrombosis in any solid organ transplant. Unfractionated heparin may increase the risk of major bleeding in renal transplant recipients. Interventional studies are required to guide transplant units in managing patients at high risk of thrombosis.

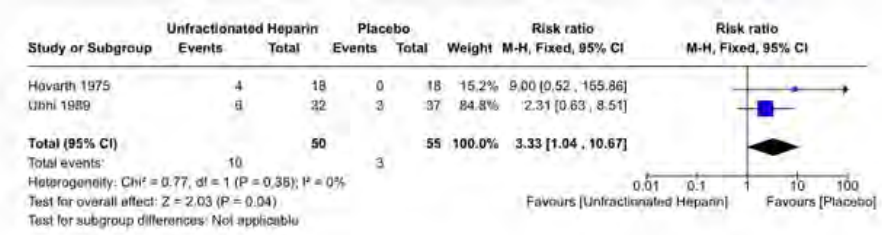


Figure 1: Risk of major bleeding events with unfractionated heparin versus placebo in renal transplantation

P121

The Welsh experience of COVID-19 in the transplant and waiting-list population

Mr Usman Khalid, Mr Mohamed Ilham, Miss Ky-Leigh Ang, Dr Pramod Nagaraja, Mr Doruk Elker, Mr Argiris Asderakis

Cardiff Transplant Unit, University Hospital of Wales, Cardiff, United Kingdom

Introduction: The COVID-19 global pandemic has brought the world to a standstill and led to many healthcare services including transplantation being temporarily suspended. In order for transplantation to safely recommence, there is a need to understand the effects of COVID-19 in transplant and wait-listed patients.

Methods: All transplant and waiting list patients who developed proven COVID-19 infection were identified prospectively. As of 1st March 2020, there were 1480 patients under follow up with a functioning transplant and 149 patients active on the waiting list. Any transplant or waiting list patients who presented to the emergency department in any of the South and Mid Wales hospitals or to our transplant telephone service with a presumed diagnosis of COVID-19 between 1st March 2020 and 31st May 2020 were included. We identified 21 patients with proven COVID-19 infection (13 transplant; 8 waiting list) during this first peak of COVID-19 in Wales.

Results: Median age was 57 years (24-69), 62% were male, all were Caucasian. Median BMI was 29 kg/m^2 (22-42), and 81% had 1 or more significant co-morbidity. Median time from transplant to COVID-19 infection was 135 months (9–356), and 17.5 months (5–69) since being listed, for waiting list patients. Seventeen (81%) patients were admitted to the hospital, 18% in Intensive Care Unit (ICU), and 5 (24%) patients died (4 transplant and 1 wait-listed). 2/4 transplant patients who died had recent malignancy. Although, the mortality of hospitalized transplant patients was high, their infection rate of 0.87% (13/1480) meant that the overall mortality of transplant follow-up patients, as a result of COVID-19, was low.

Discussion: This data, which reports the direct impact of COVID-19 on transplant and waiting-list patients during the 1stpeak of the disease in Wales, provides confidence to restarting the transplant programme, provided a series of measures aiming to avoid infections in newly transplanted patients, are also taken.

P122

Solid organ transplantation from deceased donors with a history of melanoma: a national registry linkage study

Dr George Greenhall[1,2], Mr Chris Callaghan[3,2], Mr Christopher Watson[4,5,6]

[1]NHS Blood and Transplant, Bristol, United Kingdom. [2]King's College London, London, United Kingdom. [3]Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [4]University of Cambridge, Cambridge, United Kingdom. [5]The Cambridge NIHR Biomedical Research Centre, Cambridge, United Kingdom. [6]NIHR Blood and Transplant Research Unit in Organ Donation and Transplantation, Cambridge, United Kingdom

Background: Transmission of malignancy is an unavoidable risk of organ transplantation. Previous studies suggest that melanoma has a high transmission risk. However, reporting bias and insufficient details of the donor disease limit these estimates. Reliable assessment of the risk of cancer transmission will help shared decision-making.

Methods: We performed a national linkage study using data from the UK Transplant Registry and the National Cancer Registration and Analysis Service (NCRAS). We included all consented deceased donors and the recipients of their organs in England between 1st January 2000 and 31st December 2016. We identified all donors with a diagnosis of melanoma recorded in NCRAS. We then established whether any recipients developed melanoma following transplantation. We also examined patient and allograft survival in the recipients.

Results: Of 23 consented donors with a history of melanoma, nine were utilised. Among the utilised donors, the median age was 70 years (range 53 to 80); median time from melanoma diagnosis to donation was 10 years (range 3 to 25). Four cases had Breslow thickness >1.5mm; four extended to Clark's level 4 (see Table). A total of 14 organs (ten kidneys, three livers, one heart) were donated to 14 recipients in England. After a mean follow-up of 3.8 years, two allografts failed, two recipients died and two developed post-transplant malignancy. No recipients were diagnosed with melanoma following transplantation.

Conclusion: This donor series, which included some cases that are considered as conferring a high risk of transmission, was not associated with any cases of cancer transmission. While encouraging, this is insufficient to affect national guidance. Routine integration of transplant and cancer registry data may improve the safety of the national transplant program.

Table: Characteristics of utilised deceased donors with a history of melanoma, 2000-2016.

Year of donation	Age (yr)	Time since diagnosis (yr)	Breslow thickness (mm)	Clark's level	Organs transplanted
2010	53	23		4	1
2011	66	10	0.4	2	3
	74	24	2.0		2
2013	71	25			2
2014	66	3	1.8	4	1
	54	18			2
2016	75	6	0.4	3	2
	80	4	2.5	4	1
	70	8	4.4	4	2

P123

Organ donation starts with retrieval: creating guidance for a regional paediatric critical care transport service to identify potential paediatric organ donors

Dr Annabel Baines[1], Dr Omer Aziz[1], Sarah Box[2]

[1]Wales and West Acute Transport for Children (WATCh), Bristol, United Kingdom. [2]NHS Blood and Transplant, South West, Bristol, United Kingdom

Introduction: There has been a 75 % increase in deceased organ donation rates in the UK, over the past decade. However, paediatric donation rates have remained static. Consequently, the reduction in the number of individuals waiting for a transplant has not been observed when considering paediatric patients, with children waiting 2.5 times longer compared to adults for a cardio-thoracic organ. The UK Paediatric and Neonatal deceased organ donation strategy aims to ensure that no opportunity for paediatric donation is missed. Paediatric deceased donation occurs almost exclusively in regional paediatric intensive care units (PICU). Specialised paediatric transport services are the first contact with paediatric critical care for those children presenting to a District General Hospital (DGH). Our recent telephone survey found that none of the 11 nationwide transport teams have specific transport guidance for identifying potential donors. NHSBT data identified only 14 paediatric patients (<16 years) between 2015 to 2020 who proceeded to solid organ donation outside the PICU setting.

Case presentation: The South West Organ Donation team have recently facilitated organ donation of a child in a DGH. The DGH was 170 miles from its regional tertiary paediatric hospital and PICU, proving that it is possible to facilitate donation, in the rare instance of withdrawal of life sustaining treatment (WLST), outside of the paediatric critical care setting.

Outcome: We have created guidance for our regional paediatric transport service (Wales and West Acute Transport for Children) to enable recognition and referral of potential donors and for timely advice to be provided for those patients being cared for outside a PICU environment.

Discussion: Although WLST for paediatric patients outside the critical care environment is rare, when this does occur we propose that appropriate guidance for these teams could provide an additional opportunity to identify paediatric donors.

P124

How has 'Montgomery' changed the way we document risks on consent forms for deceased donor kidney transplantation? A single-centre audit and re-audit

Ms Aliyah Hussein, Mr Chris Callaghan

Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction: The 2015 Montgomery case changed the remit of risk discussions required during the consent process. This audit reviewed single kidney transplant (SKT) consent forms to establish which risks are documented, and whether this legal case affected risk discussions. Following the audit we introduced a pre-printed consent form and closed the audit loop by assessing its uptake.

Methods: Generic Trust paper consent forms for all patients aged 50+ years who received a deceased donor SKT in our centre in 2014 (n=58; pre-Montgomery) and 2017 (n=70; post-Montgomery) were reviewed to see if 20 perceived 'gold standard' risks were documented. A pre-printed procedure-specific consent form was then introduced in July 2019. The audit cycle was closed by reviewing the case-notes of every alternate patient aged 50+ years who received a deceased donor SKT from 01/08/19 to 29/02/20 to check if the pre-printed form was used.

Results: Overall, 53% of the 20 'gold standard' risks were documented in 2014 (pre-Montgomery) versus 59% in 2017 (p=0.55). After the introduction of the pre-printed consent form there was an 91% uptake of the form, all covering the gold standard risks; of the 9% of consent forms that did not use the pre-printed document, an overall 55% of the 'gold standard' risks were documented.

Discussion: This re-audit establishes the importance of using a pre-printed consent form to standardise risk discussions. We suggest that the use of pre-printed procedure-specific forms should be strongly encouraged throughout the NHS to help support 'Montgomery-appropriate' consent discussions, and that on-line electronic consent processes should also be considered.

P125

A cost-benefit analysis of minimal access donor nephrectomy surgeries performed at a busy NHS transplant centre

Mr Hemant Sharma[1,2], Dr Avinash Odougoudar[1], Mr Dan Ridgway Ridgway[1], Mr Abdel Hammad[1], Mr Ajay Sharma[1], Mr Sanjay Mehra[1]

[1]Royal Liverpool University Hospital, Liverpool, United Kingdom. [2]Oschner Clinic, New Orleans, USA

Background: We performed the cost-benefit analyses comparing Total Laparoscopic Retroperitoneoscopic donor nephrectomy (TLTLRPDN) versus Hand-assisted laparoscopic donor nephrectomy (HALDN) operations performed at our centre since 2011. Published cost figures of Robotic-assisted Donor nephrectomy (RADN) from Ochsner Clinic, New Orleans were used to compare our results.

Methods: We used a micro-costing approach to estimate the cost from the hospital perspective for N= 173 minimal access donor nephrectomies (N= 137 – TLRPDN; 35 - HALDN). Cost estimates took into account, sterilization costs for multiple-use equipment, costs for purchasing single-use equipment, staff, hospital stay and intraoperative medications and post-op analgesia. Quality-Adjusted Life Year (QALY) was assessed at 1-year post-operatively and then annually.

Results: The donor characteristics were not different in both groups: Median age 52.7 (26-78) years - TLRPDN/ 54 (25-74) years - HALDN, Median BMI 26.5±4 TLRPDN versus 27.2±5 HALDN, Mean PCA time 1.6 days TLRPDN versus 2.4 days HALDN, Mean Hospital stay 3.5 ± 1.2 days TLRPDN versus 4.1± 1.6 days. The average costs for a single non complicated TLRPDN was (Total £9089)– Theatre (Instruments, & Staff) £4,800; Ward-Stay £3,700 and Other Costs (tests, drugs & PCA) £589. The average costs for a single non complicated HALDN was (Total £9973)– Theatre (Instruments & Staff) £5400; Ward-Stay £3,700 and other Costs (tests, drugs and PCA) £873. In comparison, the US data quotes average RADN theatre costs at £6709 ($8913). The average Quality Adjusted Life Year (QALY) at 1 and 3 years were 0.84/2.54 for TLRPDN and 0.79/ 2.32 for HALDN. The QALY gained with TLRPDN was 0.22, with cost per QALY gained at £1,900.

Conclusions: TLRPDN provides cost-benefit compared to HALDN. More costing data needs to published with regards to RADN.

P126

Modifiable barriers in decision making around living donor kidney transplantation – A rapid scoping review to guide DEAL-KD study

Ahmed Ahmed[1], Anna Winterbottom[1], Shenaz Ahmed[2], John Stoves[3], Sunil Daga[1]

[1]Leeds Teaching Hospitals Trust, Leeds, United Kingdom. [2]University of Leeds, Leeds, United Kingdom. [3]Bradford Teaching Hospitals, Bradford, United Kingdom

Introduction: Living donor kidney transplantation (LDKT) is the optimal modality of renal replacement therapy for patients with advanced renal disease; associated with superior recipient and graft survival. LDKT offers better perceived quality of life and self-reported health status versus dialysis. The decision making can be complex; healthcare professionals convey information to patients but rely on the recipient to encourage potential donors to engage. LDKT occurs less frequently in Black and Minority Ethnic (BAME) groups compared to Caucasians. This rapid scoping literature review aims to identify modifiable barriers in the decision making to pursue LDKT with a focus on BAME populations.

Methods: 208 articles were identified from Pubmed and Medline using keywords; barriers, decision making, living donor, kidney transplantation. Studies focusing on donors, paediatric recipients and abstracts for conference purposes only, were excluded.

Results: 25 studies were included; USA (15), Netherlands (3), Canada (3), New Zealand (3), UK (1). 18 studies, based in the USA (13), Netherlands (3), New Zealand (2) included BAME groups; African Americans (8), far East Asian (1) ,Hispanics (3) , and mixed other (6). South Asians were represented in one study, as 6% of the study sample. Key barriers identified were; 1) Lack of knowledge and insight into LDKT 2) Higher risk perception 3) Fear of financial burden on donors 4) Guilt for requiring a kidney and causing potential harm 5) Religious and cultural reservations.

Discussion: This literature review provides a global perspective on modifiable barriers to decision making in pursuing LDKT. This review will inform The Decision Around Living Kidney Donation (DEAL-KD) study (ref: KRY 19-127) to create a patient decision aid to address these perceptions and facilitate engagement with particular focus on South Asian groups the second largest ethnic group in the UK. Further exploration of stakeholder views will enable the development of a culturally sensitive, evidence-based resource.

P127

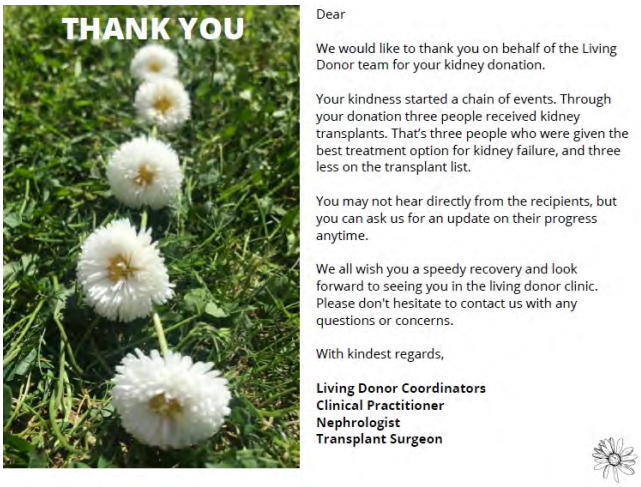
Adopting thank you cards to altruistic kidney donors who are less likely to receive a feedback from the recipient- a single centre initiative

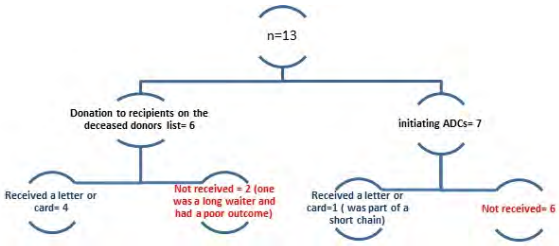
Caroline Basarab-Horwath, Debbie Butlin, Veronica Lennon, Lisa Hamilton, Kevin Firth, Ceris Harrison, Mr. Ravi Pararajasingam, Mr. Yazin Marie

Sheffield Kidney Institute, Sheffield, United Kingdom

Introduction: It is a usual practice of the NHS Blood and Transplant (NHSBT) to send a thank you letter to the families of deceased donors. In our centre, we found that Non Directed Altruistic Donors (NDADs) are less likely to receive feedback if they initiate altruistic donor chains (ADCs). We adopted a thank you letter that was designed locally and sent to NDADs.

Methods: Retrospective analysis of donors of 13 NDADs over the last 7 years.





Results: The vast majority of donors who initiated ADCs did not receive a feedback from the recipients. Overcoming this, a locally designed thank you card was sent to NDADs on behalf of the transplant team. It also notifies that they may not hear directly from the recipient.

Discussion: Saying "thank you" is the simplest but most powerful way to acknowledge another person's value, achievement or gift. Donating a kidney is the most precious gift a patient with kidney failure can ever have. The UK Living Kidney Sharing scheme (UKLKSS) is one of the most successful schemes in Europe. It includes paired/pooled donation (PPD) and ADCs. The latter is normally initiated by NDADs. Our analysis showed that NDADs who initiated ADCs are less likely to receive a feedback from the recipient. After gaining local approval in our trust, we designed a thank you letter and was sent to NDADs. It is very important to convey gratitude to the donor in order to show a sign of respect to the person who helped trigger three transplants and an acknowledgement that the kidney donated did matter. We suggest generalising this initiative nationally.

P128

Variability in estimation methods for GFR measurement in living donors follow-up

Dr Amrita Ramnarine[1], Dr Mir Naushad Amin[2], Dr Seema Shrivastava[1]

[1]St. George's Hospital, London, United Kingdom. [2]St. Georges Hospital, London, United Kingdom

Introduction: Living donors have life-long follow-up post donation. The accuracy of estimated GFR measurements in this group is uncertain. Previous studies have found that CKD-EPI(2009) values were closer to true GFR in higher-normal ranges. Recently, our transplant centre measures CrCl alongside CKD-EPI to estimate GFR during follow-up. It is important to understand how these estimates compare. A reduction of roughly 30% is expected post compensatory hyperfiltration. Different estimation methods may mask GFR reduction especially in the longer-term.

Methods: Donors who had provided a 24-hour urine sample for CrCl measurement at follow-up were retrospectively analysed from the transplant donor database. GFR was estimated using CKD-EPI pre-donation,1-mth and 1-year post. Finally, CrCl was compared to eGFR using CKD-EPI at 3 years-follow-up for recent donors and at 8 year-follow-up for longer-term donors. The results were compared using unpaired t-test.

Results: Pre-donation, 36 donors aged 22-70 were found to have a higher eGFR using CKD-EPI compared to the measured GFR using Iohexol (mean: 95.2ml/min/1.73m^2 vs 86.6 ml/min/1.73m^2, p<0.02). Reduction of eGFR was 33% at one month and 33.6% at 1year. In 20 patients at 3-years post donation, eGFR values ranged between 40-75ml/min/1.73m^2 using CKD-EPI and 49-129ml/min using CrCl. In 11 patients at 8-years post donation, eGFR values ranged between 43-102ml/min/1.73m^2 using CKD-EPI and 48-105 ml/min using CrCl. The CrCl values were significantly higher compared to CKD-EPI (p<0.002) at 3 years but not at 8 years.

Discussion: The findings of this small study suggest that current estimates are likely to overestimate the eGFR compared to the true GFR in donors. This is important as this population are at increased risk of ESRD, which may not be recognised early. Furthermore, early on, it appears CrCl further overestimates the GFR. As such, further study is required to determine the best measurement in the longer term follow-up of living donors.

P129

Project to establish whether regular clinical supervision has an impact on the wellbeing of the specialist nurses in organ donation

Mrs Lucy Barnes

NHSBT, Cardiff, United Kingdom

A key aim of the NHS Blood & Transplant Health and Wellbeing Strategy is to increase the number of initiatives that add value to ensure employees are healthy and happy at work. The wellbeing of the Specialist Nurses Organ Donation (SNODs) is gaining interest and a topic which has not been looked into in the wider research field. The role is rewarding but the emotional impact of constant exposure to death and bereavement should not be underestimated. Because of this, I sought Clinical Supervision (CS) and found it to be beneficial. CS is a process of guided reflection with the aim of improving staff welfare and support professional development.

Funding was sourced from a local Organ Donation Committee and so I have been able pursue this project. The Professional Quality of Life Scale is used to calculate the Compassion Satisfaction and Fatigue of the South Wales team, sourced from proQOL.org. This is completed anonymously at the start, middle and end of the project to establish the impact of CS in relation to the team's wellbeing over a 12 month period. The CS is facilitated by a team of external Supervisors, and sessions are in the format of x2 individual, x2 group and full team.

At the time of submission, the project is at the 6 month point. Data are currently being collated for the mid point questionnaire. From discussion with colleagues, early indication suggest that CS is having a positive impact on individuals within the team.

I believe this project has come at a crucial time. Wellbeing is topical within the nursing profession and beyond, and if not recognised and managed can result in burnout and stress. Hopefully the end result of this project will be an indication as to whether CS should be accessible to all teams within the Organ Donation Directorate.

P130

Anxiety in patients on the waiting list for renal transplantation during the COVID-19 pandemics in three transplant centres in three countries

Dr Lorena Chavez[1], Mr Chalklin Christopher[2], RN Laura Martinez[3], Dr Laila Qassim[4], Dr M Jover[3], Dr M Gonzalez[5], Dr Juan Cabezuelo[3], Prof Calo Lorenzo[4], Prof Paolo Rigotti[4], Prof Pablo Ramirez[3], Mr Rafael Chavez[2]

[1]Sussex Partnership Foundation Trust. Dept of Psychiatry, Hastings, United Kingdom. [2]University Hospital of Wales, Cardiff, United Kingdom. [3]Hospital Universitario Virgen de la Arrixaca., Murcia, Spain. [4]Universita degli Studi di Padova, Padua, Italy. [5]Hospital Universitario Virgen de la Arrixaca., Murcia, Italy

Introduction: During the coronavirus (COVID-19) pandemic most transplant programs were temporarily suspended or reduced due to safety issues. This situation was likely to produce stress and anxiety in prospective transplant patients. The objective of this study was to investigate the occurrence of Generalised Anxiety Disorder (GAD) in patients on the waiting list for kidney transplantation during the COVID-19 pandemic at three transplant centres, in Cardiff, UK; Murcia, Spain and Padua, Italy. The uncertainty of how the pandemic would affect the transplant programs puts the patients under stress with the risk of psychological long-term damage. We assume that psychological effects are prevalent in the waiting list's patients, but do not know the extent of these.

Methods: The participants were identified from the transplant waiting list in Cardiff (n=30), Murcia (n=32) and Padua (N=30). Each participant was subjected to a structural verbally administered interview using a Hamilton anxiety scale (HAMA). Each question was scored from 0 to 4 according to severity. ANOVA test was utilised to determine the p value of differences between groups.

Results: The levels of anxiety according to the HAMA test were: Cardiff: 29 cases of mild and 1 case of moderate anxiety. Murcia: 32 cases with mild anxiety. Padua: 22 cases mild, 6 cases moderate and 2 cases moderate to severe anxiety ($p<0.001$).

Discussion: The majority of patients on the survey were categorised as mild to moderate in all the groups investigated. There were some more severe cases in the Padua group; however, the values remained generally within the category of mild to moderate. Given that the city of Padua was near the epicentre of the pandemics at the time of data collection, we anticipated higher anxiety values in that group but that was not the case. The Hamilton test proved to remain consistent across the centres investigated

P131

Non-medical prescribers' facilitation of homecare provision for cardio-thoracic transplant recipients

Mrs Adriana Robb, Mr Richard Quigley, Ms Sadie von Joel, Mrs Irene Cardella, Ms Jennifer Baxter, Mr Paul Lincoln, Mrs Beata Watson, Mrs Heather Chapman

Royal Papworth Hospital, Cambridge, United Kingdom

Introduction: Pharmacy Homecare is the national set-up for the continuous provision of specific pharmaceutical therapies to patients with certain long-term conditions, delivered to their homes. In 2013, NHS England repatriated the immunosuppressive prescribing responsibility, for post-transplant patients, back to the specialist centres. For cost-saving and patients' convenience, the chosen mechanism to deliver this kind of service was Homecare.

Case Presentation: At one of the largest UK cardiothoracic transplant centre, 100 days post the respective transplantation, close to 1000 transplant patients had been set up with this particular provision, inclusive of immunosuppressive, steroidal and some other specific pharmaceutical agents. The process involves: registration for newly-transplanted patients, prescribing of individualised therapeutic regime, pharmacy screening and prescription transfer to an external industry supplier, ensuring dispensing and delivering to patients' nominated locations. Historically, this system incorporated a limited number of specialist transplant nurses, pharmacists and a dedicated in-house Homecare team, relying on the prescribing from transplant consultants. However, the ever-increasing medic's commitments necessitated a change. Therefore in 2018, a project was commenced to transfer the prescribing function entirely to the specialist transplant nursing staff and increased the number of non-medical prescribers. Ultimately, this would free more physicians' time, providing faster turnaround of repeat, modified and new scripts, without long delays.

Outcome: Currently, the cardiothoracic transplant service benefits from four qualified NMPs, with two more in training. Staff are designated daily to deal with a multitude of complex and delicate medication regime alterations and any issues related to the continuous medication provision.

Discussion: The increased numbers of NMPs are a valuable resource for the ongoing prescribing and delivery of vital therapy management, fundamental to the long-term transplant outcomes. In conjunction with the planned introduction of complete digitalisation of transplant medical records, the NMPs will ensure more efficient management of patients' pharmaceutical therapy, resulting in a much improved service.

P132

Improving cold ischaemia time in renal transplantation: a closed loop audit

Dr Sheila Lee, Mrs Paula Doyle, Miss Carrie Scuffell, Mrs Tracey Graham, Dr Ashwin Sivaharan, Dr Sara Drever, Dr Sachin Teelucksingh, Mr Colin Wilson, Prof Neil Sheerin, Mr Aimen Amer

Freeman Hospital, Newcastle upon Tyne, United Kingdom

Introduction: Prolonged cold ischaemia time (CIT) is associated with reduced long-term graft and patient survival following renal transplantation. The national drive to minimise CIT has gained further impetus during the current SARS COV-2 pandemic. We present our closed-loop audit which highlights our recent CIT, identifies areas for improvement and assesses the impact of implementing these measures.

Methods: We audited our CIT for recipients of deceased donor kidney transplants over a twelve month period in 2019 against NHS England guidance. We determined the local median CIT and correlated this with potential contributing factors to delayed transplantation from organ arrival to implantation. We implemented steps to address the identified factors for delay and subsequently re-audited our practice after 12 months in 2020.

Results: The study included 66 recipients of deceased donor kidney transplants. Only 51% and 19% of our DBD and DCD transplants respectively were within the recommended CIT limits. Only 42% of transplants were virtually crossmatched and these were associated with significantly lower CIT. Crossmatch results that became available between 10pm-8am were associated with transplants that had CIT 2hr longer than those with results available between 8am-10pm. This reflected surgeon and theatre team availability. On that basis, we expanded our virtual crossmatch eligibility criteria. Our re-audit demonstrated a 79% increase of virtual crossmatch-based transplants and a 3 hour reduction in CIT for DBD transplants. The measures had little impact on DCD transplants.

Discussion: Expansion of our virtual crossmatch criteria has resulted in considerable reduction in CIT for DBD renal transplants. It remains unclear why the effect on DCD transplants was less pronounced. The additional delays to transplantation during the early stages of the SARS COV-2 pandemic may have been a contributing factor. Our recent expansion to a dual consultant transplant service may further improve our CIT.

P133

COVID-19 in kidney transplant patients from a large UK transplant centre: exploring risk factors for disease severity

Miss Kiran Sran[1], Mr Jonathon Olsburgh[1], Dr Theodoros Kasimatis[1], Mr Kieron Clark[2], Dr Refik Gokmen[1], Dr Rachel Hilton[1], Dr Sapna Shah[3], Dr Catriona Shaw[3], Dr Chris Farmer[4], Dr Hannah Kilbride[4], Dr Elham Asgari[1]

[1]Guy's & St. Thomas' NHS Foundation Trust, London, United Kingdom. [2]Guy's & St. Thomas' NHS Foundation Trust, London, United Kingdom. [3]King's College Hospital NHS Foundation Trust, London, United Kingdom. [4]East Kent Hospitals University NHS Foundation Trust, Canterbury, United Kingdom

Introduction: The novel SARS-CoV-2 virus pandemic has significantly impacted the health of immunocompromised individuals following solid-organ transplantation, who are at higher risk of more severe infection and poorer outcomes. As a large London transplant centre serving a diverse patient population, we report the outcomes of SARS-CoV-2 infection in our cohort of 2848 kidney and/or pancreas transplant patients during the first wave of the pandemic.

Methods: Data was obtained retrospectively for all transplant patients who attended hospital between the period of March to May 2020, and had a positive naso-pharyngeal SARS-CoV-2 test.

Results: 66 patients were found to be positive for SARS-CoV-2. 20% were managed as outpatients, 59% admitted to the general ward and 21% required intensive care. Management consisted of reduced immunosuppression, antibiotics for pneumonia or sepsis, and other supportive treatments. Within our cohort, 12 patients (18%) died, with an overall mortality of 0.4%. Predictive risk factors for COVID-19 severity were explored.

Discussion: Severe disease was associated with lower haemoglobin prior to COVID-19 diagnosis and lower lymphocyte count at the time of diagnosis, but not age, gender, ethnicity, nor pre-existing comorbidities. Lower GFR and higher CRP were associated with more severe disease. Despite no use of hydroxychloroquine, azithromycin, anti-viral or immunomodulatory medications, mortality within our cohort was similar to current international rates. These findings supported a cautious and phased restart of transplantation at our centre, following a period of closure at the peak of the pandemic.

P134

Unique case of recurrent non-neutropenic typhlitis

Dr Dhruv Sahni[1], Dr Henrietta Stockdale[1], Mr David leiberman[2], Mr Richard Stevenson[1]

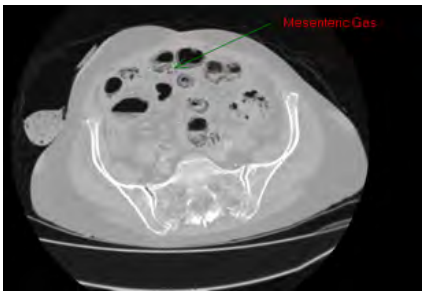
[1]Glasgow Royal Infirmary, Glasgow, United Kingdom. [2]Royal Blackburn Hospital, Blackburn, United Kingdom

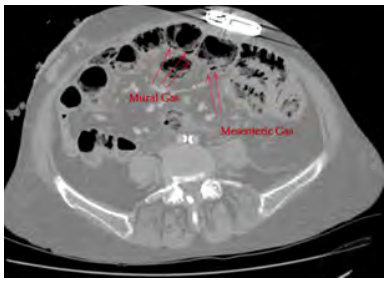
Introduction: Tacrolimus, a macrolide calcineurin inhibitor, is an important component of the immunosuppressive regime used after solid organ transplantation. It is known to predispose patients to typhlitis also known as neutropenic enterocolitis, which presents with the characteristic triad of abdominal pain, fever, and neutropenia.Typhlitis most commonly affects the caecum; however, there have been certain reports of affected small/large bowel segments.

Case presentation: A 66-year-old lady was referred with vomiting, abdominal pain, and passage of blood per ileostomy. The patient had an extensive medical history including a panproctocolectomy for Crohn's disease, cholecystectomy and a liver transplant. Her immunosuppressive regime included prednisolone, azathioprine and tacrolimus. Based on her presentation, a presumptive diagnosis of ischemic bowel was made and a non-contrast (due to AKI) CT scan demonstrated evidence of intramural gas with marked mesenteric and portal venous gas.The patient required inotropic support in addition to fluid resuscitation and broad-spectrum antibiotics. The decision was made to proceed to laparotomy, the findings of which included dense adhesions but with normal healthy small bowel.The patient was transferred to the ITU and managed a complete clinical recovery.After several investigations, it was concluded that her symptoms were caused by typhlitis owing to her tacrolimus therapy. In 2020, the patient presented with similar symptoms.She was able to undergo a Contrast-enhanced CT scan during this episode as she had presented early with preserved renal function.Her radiological findings were similar to the previous episode. However, owing to her known past history, she was managed conservatively with IV antibiotics and fluids.

Results: She responded well to this treatment and didn't require any inotropic support and was managed in HDU.

Discussion: To the authors knowledge, no similar cases have been reported so far, which makes this case unique and makes a strong motion for the clinicians to maintain a high suspicion for typhlitis in immunocompromised patients, even in absence of classical feature of neutropenia.





P135

Donor families supported: Information Digital Link (IDL)

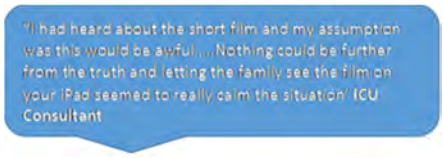
Susan Hannah[1], Nicola Newbound[2], Ailsa Lyttle[1]

[1]NHSBT, Falkirk, United Kingdom. [2]NHSBT, Oxford, United Kingdom

Introduction: Communicating critical information with potential donor families in times of grief is complex, requiring highly advanced communication skills. To support families and acknowledge the diverse way information is processed an animated visual aid (IDL) was introduced for specialist nurses to share which included key information of the donation process to support decision making.

Case presentation: A working group was set up and approval sought from RINTAG and Senior Management (NHSBT), with proposal to undertake several service evaluations to determine the impact the IDL has within the donation conversation. In collaboration with the Professional Development Team training and deliberate practice was undertaken in all 12 teams over several months. Subsequently evaluations collated from the potential donor families, the donor advisory group and the specialist nurses.

Outcome: Following completion and review of all evaluations, future use of the IDL will be built into training and development of our workforce. Whilst undertaking the training there has been positive feedback from units and specialist nurses with 'helping to bring families together when watching ' and providing the QR codes enable families to share and watch the IDL later. The IDL has been recorded in several languages (signing to be included) making it flexible, adaptable and inclusive with many families throughout the UK.



Discussion: Ongoing evaluations from families will be critical to the delivery and future development of the IDL. It is also important to recognise that specialist nurses must feel confident in using for it to become a natural part within a family conversation. With current covid restrictions visiting ICU's the link has frequently been sent in supporting the family approach conversation with telephone and videos. The IDL was recently recognised in the final stages of the PEN Awards and shared wider (Canada and Texas) with international donation communities.

P136

Transplanting complex recipients using normothermic machine perfused declined liver grafts: a cost analysis study

Mr. Hanns Lembach Jahnsen, Mr. Angus Hann, Mr. Matthew Armstrong, Mr. Neil Rajoriya, Mr. Amardeep Khanna, Ms Hermien Hartog, Mr Thamara Perera

The Liver Unit, Queen Elizabeth Hospital Birmingham, Birmingham, United Kingdom

Introduction: Normothermic Machine Perfusion (NMP) is rapidly transforming organ preservation and clinical practice in liver transplantation. Whilst safety and feasibility of NMP has been demonstrated, economic benefits and cost effectiveness in particular groups of recipients is needed. The aim of this project is to perform a health economic analysis for complex recipients transplanted using marginal grafts with NMP.

Methods: A detailed itemised cost for each service delivered for 44 patients transplanted using NMP between March 2018 and March 2020 was extracted. Costs were separated into pre-transplant, transplant and post-transplant related. Pretransplant expenses included charges from moment of inclusion in waitlist, while post-transplant expenses were censored at 12 months follow-up.

Results: NMP represented 12% of transplant activity in the unit during study period. Cumulative pre-transplant expense was 623,028GBP, with a median expense of 1,755GBP per-patient(pp). Median time on waitlist was 11 months, spending a median of 265GBP/pp/month. Cumulative transplant expense was 1,573,034GBP with a median of 29,235.5GBP/pp. Transplant expense correlated with overall Hospital and ITU stay (Pearson CI 0.97 and 0.95). Additional factors related to transplant expense are summarised in Table1. Post-transplant expense reached 372,458GBP with a median of 6,469GBP/pp. Mean follow-up was 7 months, with a median expense of 865GBP/pp/month. There was no correlation between re-transplant as an indication, rejection or morbidity with additional expense in the post-transplant period. Overall, patients transplanted gained 16.5 Quality Adjusted Life Years (QALY) with a cost per QALY of 3,763GBP. Cost per QALY in patients <34 years is 3,083GBP compared to 4,520GBP in patients >65 years (Table 2).

Discussion: NMP technology enables use of declined grafts, expediting access to transplant for the selected recipients and increasing overall transplant activity. EAD and morbidity related to transplantation of complex recipients generate more expense when present. Young recipients gain more QALY and have lower cost per QALY compared to older recipients.

Table 1: Factors related to increased transplant expense in patients with marginal livers with NMP.

Transplant Expense	Yes		No		
	n	Mean Cost	n	Mean Cost	p
Re-transplant*	15	£51,465.57	15	£53,403.38	0.92
Rejection	14	£59,168.22	16	£46,542.45	0.52
Re-Laparotomy	5	£93,335.34	25	£44,254.3	0.055
EAD	13	£85,940.96	17	£26,811.86	0.001
RRT	13	£84,413.26	17	£27,980.11	0.002
Morbidity CD>3	14	£80,938.69	16	£27.493.28	0.004

Abbreviation: EAD: Early Allograft Disfunction, RRT: renal replacement therapy, CD: Clavien Dindo Classification.
*This corresponds to patients undergoing re-transplant with a machine perfused graft, not re-transplant as a complication.

Table 2: Quality Adjusted Life Years analysis for patients transplanted under the NAPLES initiative.

	Survival§	QoL§	Total treatment Cost#	QALY	QALYs gained	Cost per QALY
Pre-Transplant						
	0.87	0.63	£1,755.2	0.54		
Post-Transplant						
Overall	22.2	0.77	£62,275.23	17.09	16.54	£3,763.79
17-34 years	28.8	0.77	£66,695.07	22.17	21.62	£3,083,75
35-44 years	24.6	0.77	£85,186.39	18.94	18.39	£4,631.23
45-54 years	25.3	0.77	£63801,14	19.48	18.93	£3,369.86
55-64 years	19.5	0.77	**	15.01	14.46	**
> 65 years	12.2	0.77	£39,992.18	9.39	8.84	£4,520.98

Abbreviation: QoL: Quality of Life, QALY: Quality Adjusted Life Years. **not enough patients in age group for calculation
Cost – calculated based on transplant + post-transplant expense (1st year), then lifelong tacrolimus and 1 Outpatient Appointment visit per year.
§QoL and life expectancy obtained from published data by Barber "Life expectancy of adult liver allograft recipients in the UK" GUT, 2007, Ratcliffe "Assessing Health related QoL pre and post-liver transplantation: A prospective multicentre study" Liver Transpl. 2002 and Rhian Williams "Home-Based Exercise in Patients Awaiting Liver Transplantation: A Feasibility Study" Liver Transpl. 2019.

P137

Hypoperfusion warm ischaemia time in renal transplants from donors after circulatory death

Mr Ioannis D. Kostakis[1,2], Dr Theodoros Kassimatis[1], Ms Clare Flach[3], Mr Nikolaos Karydis[1], Mr Nicos Kessaris[1], Mr Ioannis Loukopoulos[1]

[1]Department of Transplantation, Guy's Hospital, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom. [2]Department of HPB Surgery and Liver Transplantation, Royal Free Hospital, Royal Free London NHS Foundation Trust, London, United Kingdom. [3]King's College London, School of Population Health and Environmental Studies, London, United Kingdom

Introduction: Donor hypoperfusion before asystole in renal transplants from donors after circulatory death (DCD) has been considered responsible for worse outcomes than those from donors after brain death (DBD). We assessed how the duration of hypoperfusion phase [hypoperfusion warm ischaemia time (HWIT)] affects the outcomes of DCD renal transplants.

Methods: We included 10309 adult renal transplants (7128 DBD, 3181 DCD) (01/01/2010-31/12/2016) from the UK Transplant Registry. We divided DCD renal transplants in groups according to HWIT. We compared delayed graft function (DGF) rates, primary non-function (PNF) rates and graft survival among them using DBD renal transplants as reference group.

Results: DGF rate was 21.7% for DBD cases, whereas it was around 40% for DCD cases with HWIT shorter than 30 min (0-10 min: 42.1%, 11-20 min: 43%, 21-30 min: 38.4%) and it was 60% for DCD cases with HWIT longer than 30 min ($p<0.001$). All DCD groups showed higher DGF risk when compared with DBD renal transplants in logistic regression analysis also (0-10 min: OR=2.686, 95%CI: 2.352-3.068, $p<0.001$, 11-20 min: OR=2.531, 95%CI: 2.003-3.198, $p<0.001$, 21-30 min: OR=1.764, 95%CI: 1.017-3.059, $p=0.043$, >30 min: OR=5.814, 95%CI: 2.798-12.081, $p<0.001$). The highest risk for DGF in DCD renal transplants with HWIT more than 30 min was again confirmed by logistic regression analysis when it was compared with that of the other groups (compared with DBD: OR=5.814, 95%CI: 2.798-12.081, $p<0.001$; compared with DCD: 0-10 min: OR=2.165, 95%CI: 1.038-4.505, $p=0.039$; 11-20 min: OR=2.299, 95%CI: 1.075-4.902, $p=0.032$; 21-30 min: OR=3.3, 95%CI: 1.33-8.197, $p=0.01$). No statistically significant differences were detected regarding PNF rates ($p=0.713$) or graft survival ($p=0.757$), which was confirmed by multivariate analysis.

Conclusions: HWIT of more than 30 min increases the risk for DGF greatly, but without affecting the possibility of PNF or the graft survival.

P138

Patient involvement in discussions to restart renal transplantation during the first wave of the COVID19 pandemic

Ms Asia Imedi[1], Mrs Alison Richardson[2], Mr Neal Banga[2], Dr Gareth Jones[2]

[1]Barts Health NHS Trust, London, United Kingdom. [2]Royal Free Hospital, London, United Kingdom

Introduction: In July 2020, most kidney transplanting centres had stopped transplantation due to the COVID-19 pandemic and were considering reopening. Centres focused mainly on the safest pathways of admitting patients for transplant surgery with minimal to no risk of contracting COVID-19. In our unit, we also focused on involving our patients in decisions to restart transplantation.

Methods: All prospective transplant patients already on the national kidney transplant waiting list were included into survey. Exclusion criteria were patients suspended from waiting list and all renal patients not waitlisted for transplantation. An eight questions online survey was conducted asking patients if they would like to see the kidney transplantation program restarted, what changes they would like to see before the program reopened and if they were admitted for a deceased or living donor transplant, what concerns would they have and what could be done to minimise them.

Results: A total of 252 waitlisted patients were contacted and 45.6% (115) responded. Out of the 115 respondents, 96.5% (111) were patients, 2.6% (3) were relatives and 0.9% (1) was a potential donor. 91.3% (110) of 115 respondents said 'yes' to restarting the transplant program with 8.7% (5) opposed to idea. Some of the written comments from respondent are as below:

'Do not transplant until there is a vaccine.'
'Ensure social distancing in waiting rooms.'
'Strict cleansing of surgical and patient areas, and testing of staff and patients, to minimise risk of any infections particularly COVID.'
'If a vaccine becomes available, transplant patients should be prioritised.'

Discussion: Patient involvement in decision making is important and has been highlighted during the COVID-19 pandemic. It facilitates documentation of specific patient requests like temporary suspensions from waiting list, and planning for patient choices to ensures resources are channelled correctly. Finally, it allows tailoring patient information to focus on patient concerns.

P139

Addition of steroids to immunosuppressive protocols are associated with increased incidence of early post-transplant hypertension

Dr Randeep S Heer, Dr Matthew J Bottomley, Mr James Gilbert

Oxford Transplant Centre, Churchill Hospital, Oxford, United Kingdom

Introduction: Hypertension is common after kidney transplantation and is a risk factor for allograft loss, cardiovascular disease, and mortality in transplant recipients. Previous studies have shown that post-transplant hypertension is poorly managed, highlighting the need for improvement. Our current protocol involves stopping all antihypertensive medications post-operatively whilst continuing β-blockers for their cardioprotective role. During the COVID-19 pandemic we adjusted our immunosuppression protocol from Alemtuzumab to Basiliximab induction with a tapering dose of prednisolone. Tacrolimus and Mycophenolate remained in place. This study reviewed the prevalence of post-transplant hypertension particularly after starting the COVID-19 immunosuppression protocol.

Methods: Kidney transplant recipients between December 2019 – May 2020 with medication-controlled hypertension pre-operatively were identified. The admission and discharge blood pressure (expressed as mean ± SD) was calculated using the average of the first three readings taken on admission and the final three readings taken prior to discharge respectively. Re-introduction of antihypertensive medication was also recorded.

Results: Fifty patients met selection criteria and were analysed (34 male, median age: 53). The mean blood pressure on admission was 155±20/84±14 mmHg. The majority of patients were admitted with at least two antihypertensive medications including β-Blockers, but at discharge, the majority were discharged with less than two medications (Figure 1). The mean blood pressure at discharge was 147±20/81±10 mmHg.

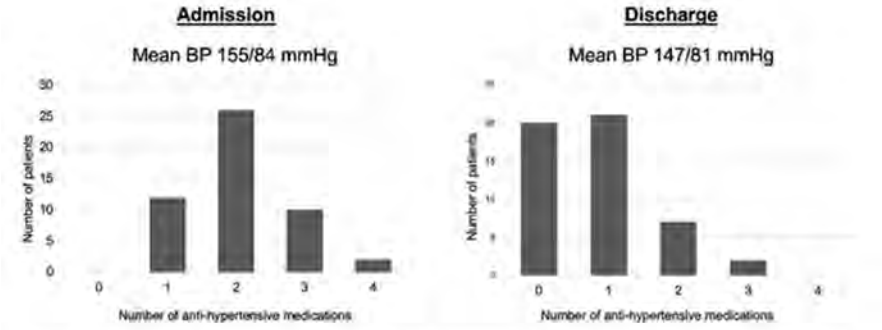


Figure 1: Bar charts showing the number of antihypertensive medications including beta-blockers prescribed for kidney transplant recipients on admission (left) and at discharge (right). *n=50.*

Demographics and admission blood pressure were similar between the two immunosuppression groups (Table 1). However, patients receiving Basiliximab were discharged with a significantly higher blood pressure compared to the Alemtuzumab group ($p<0.001$, unpaired t-test).

	Alemtuzumab	Basiliximab
n	27	23
Age, median (IQR)	52 (28)	54 (19)
Gender	16 male	18 male
Admission BP	156±21/85±15 mmHg	153±19/84±12 mmHg
Discharge BP	139±16/79±14 mmHg	157±20/84±10 mmHg

Table 1: Impact of change in immunosuppression regimen from alemtuzumab to basiliximab due to the COVID-19 pandemic. Admission and discharge blood pressure was calculated using the average of the first three blood pressure readings taken on admission and the final three blood pressure readings taken prior to discharge respectively. *n=50*

Discussion: Kidney transplant recipients are frequently discharged hypertensive despite reduction in number of prescribed antihypertensives. Our revised COVID-19 immunosuppression protocol utilises steroids, which are recognised to increase hypertension incidence, has resulted in a significant increase in blood pressure at discharge. Given these findings, steroid-based immunosuppression protocols require adequate blood pressure monitoring and avoidance of ceasing medications too soon.

P140

Does reducing cold ischaemic time in renal transplantation improve short term hospital related outcomes?

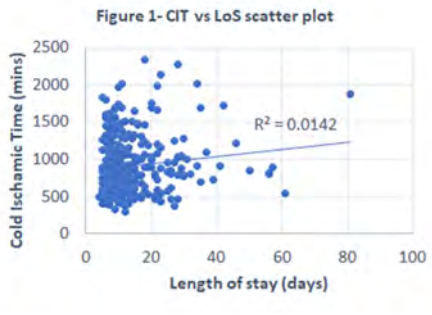
Mr David Leiberman[1], Mr Damian McGrogan[1], Dr Rachel Gallagher[1], Professor Titus Augustine[1,2], Mr Zia Moinuddin[1,2], Mr David Van Dellen[1,2]

[1]Department of Renal and Pancreas Transplantation, Manchester Royal Infirmary, Manchester, United Kingdom. [2]University of Manchester, Manchester, United Kingdom

Introduction: Prolonged cold ischaemia time (CIT) has been shown to increase delayed graft function (DGF) and can potentially affect long term graft survival in kidney transplantation. However, early effects of increased CIT, whilst less commonly reported, raise concern in planning organ allocation. We aimed to establish whether CIT has a direct correlation on patient Length of Stay (LoS) following a deceased donor renal transplant episode by comparison of short term patient and hospital outcomes between consecutive transplanted kidneys from a donor pair.

Methods: A prospectively maintained database of renal transplants performed at our centre using paired kidneys was interrogated, for LoS and other relevant short term outcomes. Data was analysed using a logistical regression analysis for multi-factorial analysis of potential confounding factors.

Results: 356 transplants from 178 donors were recorded between January 2014 and May 2019. Overall median LoS was 10 days. Total grouped analysis revealed that CIT did not show a strong correlation with increasing LoS (Figure 1).



Univariate analysis revealed that DBD donation was associated with lower LoS, as was having a previous transplant and donor age <65. DGF, surgical complications and medical complications were associated with higher LoS. On multivariate analysis, statistically significant factors prolonging LoS were the incidence of a surgical or medical complication, and DGF of the implanted graft. Paired analysis between 1st and 2nd kidneys did not reveal any statistically significant difference in LoS or clinical resource usage. (Figure 2)

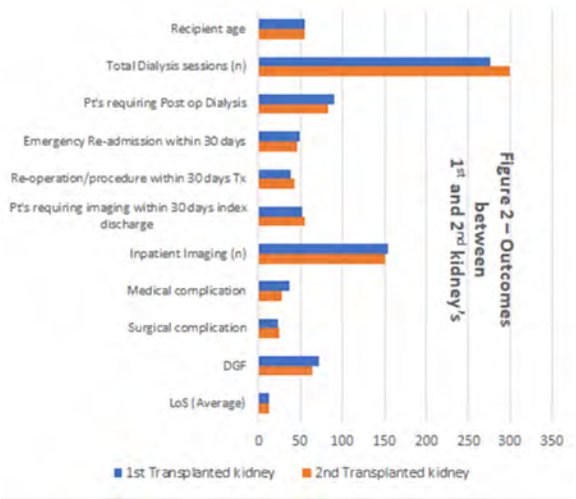


Figure 2 – Outcomes between 1st and 2nd kidney's

Discussion: Increasing CIT does not significantly correlate with increasing LoS post renal transplantation. There is no difference in re-operation, DGF, re-admission or clinical resource requirements between 1st and 2nd consecutively transplanted kidneys. However, LoS was more likely to be affected by DGF, or post-operative complications, thereby highlighting the importance of potential perfusion techniques and meticulous technique to minimise these possibilities, thereby improving equity of access to potential recipients.

P141

Symptomatic incisional hernia repair post kidney transplant: a single centre experience

Miss Laura Clementoni, Mr Parviz Sadigh, Mr Ismail Mohamed, Miss Cinzia Sammartino, Mr Ben Lindsay, Mr Vassilis Anastassiou, Mr Rajesh Sivaprakasam, Mr Muhammad Khurram

The Royal London Hospital, London, United Kingdom

Introduction: Incisional hernia is a common postoperative complications in general surgery. In kidney transplant recipients, this is associated with increasing morbidity and mortality.

Methods: A retrospective review of all transplant patients who had undergone an elective repair of large symptomatic incisional hernias between 2015 and 2020.

Results: A total of 18 patients were identified (14 male (78%), mean age 56.6 years [range 41-71], 22% diabetic, 27% on PD at the time of transplant. A significant proportion of these patients had polycystic kidney disease (28%). The median eGFR was 40 ml/min [range 8-79], the median BMI was 27 [range 21.5-35.8]. All patients underwent CT scanning pre operatively. The repair was performed at a median 544 days [range 84-3349] after transplant and the median length of in-hospital stay is 4 days [range 1-24]. In 7 patients (39%) hernia was repaired with prolene mash, in 5 (27%) patients pedicled vastus lateralis flap was used (27%), in 4 (22%) patients strattice mash (22%) and 2 (12%) had anatomical repair. Complication rate was 39%, 2 patients required re-intervention due to bleeding from a venous branch within rectus femoris muscle, and due to abdominal compartment syndrome, 1 developed seroma needing drainage and 1 developed haematoma. Infection rate was 10% and the 30-day mortality rate was 5%. One of the patient with pedicles vastus lateralis flap repair developed sepsis from the ischaemic flap and died, due to multiorgan failure, 15 days after the surgery. The recurrence rate was 6% at the latest follow up [range 6 months – 5 year].

Discussion: Complex incisional hernia remain challenging to treat. There a significant rate of complications despite multidisciplinary approach to these repairs and patients must be carefully counselled.

P142

SARS-CoV-2 infection causing COVID19 in intestinal and multivisceral transplant recipients: first case reports

Dr Mohamed Elseragy[1], Dr Lisa M Sharkey[1], Dr Effrossyni Gkrania-Klotsas[2], Mr Andrew J Butler[3], Dr Dunecan CO Massey[1], Dr Jeremy M Woodward[1], Dr Stephen J Middleton[1], Mr Neil K Russell[3], Ms Irum Amin[3]

[1]Department of Gastroenterology, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. [2]Department of Infectious Diseases, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom. [3]Department of Transplant Surgery, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

Introduction: The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first described in the Wuhan province of China in December 2019 but has since spread rapidly, affecting the vast majority of countries and was declared a pandemic by the World Health Organisation on 11 March 2020. Certain groups of patients are at higher risk of severe disease (COVID19) caused by the virus, which may include immunosuppressed transplant patients. Five patients from Cambridge Intestinal Transplant centre have contracted SARS-CoV-2. Three became infected during the first virus peak and two in the most recent peak. Three patients have recovered well and been discharged home, one remains an inpatient at this time.

Method: We reviewed the medical records and abstracted clinical information.

Outcome: Induction immunosuppression for all patients is with Alemtuzumab, maintenance with tacrolimus, tapering steroids and an antimetabolite. Patient characteristics are summarised in table 1. 4 of 5 patients (80%) survived the infection and one patient died of COVID19-related pneumonia. Patient 1 has a persistently positive COVID19 PCR test with low virus load without symptoms. Interestingly, this case was the only case that required invasive oxygenation during the initial infection. Two patients (case 1 and 3) received augmented immunosuppression for treatment of rejection prior to developing COVID19.

Discussion: Intestine-containing grafts are highly immunogenic which mandates high immunosuppressant levels. Despite this, episodes of acute cellular rejection still affect 1/3 of patients in the first year, requiring augmented immunosuppression. Two of our patients developed COVID19 following treatment for rejection. Two others were resident in supported living environments. Management of COVID19 disease in these patients should follow standard lines, but reduction of immunosuppression must be done cautiously with careful graft surveillance.

	Case 1	Case 2	Case 3	Case 4	Case 5
Gender	F	M	M	F	F
Age	47	66	66	67	47
Type of transplant	Liver, Small bowel and pancreas	Small bowel, pancreas and Kidney	Small bowel, pancreas and kidney	Small bowel and pancreas	Small bowel (2nd transplant)
Immunosuppression prior to infection	High dose pulsed steroids for ACR 6-8 days before positive swab Immunosuppressants before infection was Prednisone 5mg, Tacrolimus target level (8-10) and MMF 500 mg BD	Immunosuppressant prior infection Tacrolimus target level (4-6), MMF 250 mg BD.	High dose pulsed steroids for ACR 35-39 days before positive swab Immunosuppressants before the infection was Prednisolone 10 mg, Tacrolimus target level (8-12) and MMF 500 mg BD	Immunosuppressants prior infection Hydrocortisone 20/10/10. Tacrolimus target level (4-6) and AZA 25 mg.	Immunosuppressant prior to infection were Tacrolimus target level (6-8) and prednisolone 7.5 mg.
Maximum temperature	37.6°C	38.4°C	37.4°C	38.5°C	38.6 °C
Cough	No	Yes	Yes	Yes	Yes
Dyspnoea	No	No	No	Yes	No
Myalgias	No	No	No	No	Yes
Diarrhoea	Yes	Yes	No	No	Yes
Chest radiographic findings	Normal (3 days after swab)	RMZ patchy consolidations	Normal	Bilateral patchy consolidation s	RMZ and RLZ consolidations
Supplemental oxygen requirement	Required intubation	Nasal flow oxygen	No	Hi nasal flow	No
Withdrawal of antimetabolite	Yes	No	No	Yes	Yes
Withdrawal of tacrolimus	No	No	No	No	No
Azithromycin	Yes	No	No	No	No
Tocilizumab	No	No	No	No	No
Dexamethasone	No	No	No	Yes	No
Remdesivir	No	No	No	No	No
Bloods on day of first positive SARS-CoV-2 PCR					
WBC (NR 3.9 10.2 10*9/L)	9.0	3.7	3.7	3.58	1.3
Lymphocyte count (NR 1.10-4.50 10*9/L)	0.16	0.13	0.05	0.8	0.53
Platelet count (NR 150-370 10*9/L)	266	182	179	57	131
CRP (N 0-6 mg/L)	< 4	68	116	94	30
Procalcitonin (NR 0.00-0.50 ng/ml)	0.01	N/A	N/A	N/A	N/A
Outcome	Chronic viral shedding	Recovered and discharged	Recovered and discharged	Died 6 days after positive test	Current inpatient

ACR, acute cellular rejection; AZA, Azathioprine; CRP, C-reactive protein; MMF, Mycophenolate mofetil; N/A, Not available; NR, normal range; RLZ, Right lower zone; RMZ, Right mid zone; RT-PCR, Real time polymerase chain reaction; WBC, white blood cell count.

P143

Where were the surgeons when transplants stopped? A single centre experience

Mr Bimbi Fernando, Mr Ammar ALMidani, Mr Ayyaz Hossein, Mr Colin Forman, Miss Fiona McCaig, Mr Reza Motallebzadeh, Mr Neal Banga

Royal Free, London, United Kingdom

Introduction: The COVID-19 pandemic caused an abrupt closure of renal transplantation within our centre with an increased burden to support the wider hospital challenged by staff absences (due to sickness, isolation, shielding) and an unprecedented demand on NHS resources particular within ITU. We describe how surgical staff supported patients and the hospital during the pandemic.

Method: Strategic decisions were made to utilize transplant surgeons according to their expertise in areas of clinical need. The following were immediately identified:

-general medical & surgical rotas and ITU teams
-renal in-patients and out-patients (including dialysis units)

Within ITU there was a need for proning, surgical tracheostomy and invasive line insertions (Surgical Workforce Access Team, SWAT) as well as training and development. As staff absence rate progressed more roles were needed including direct nursing care on ITU and the dialysis units.

Results: 7 consultants, 3 SpRs, 1 CT2 and a FY1 were redeployed as outlined below:

Role	**on-call rota**	**shift when not on call**			
		SWAT	Proning	dialysis shifts	other roles
C1	renal in-pt	yes	yes	no	leadership, tracheostomy
C2	renal in-pt	yes	yes	yes	training, supervision
C3	renal in-pt	yes	yes	yes	complex vascular
C4	renal in-pt	yes	yes	yes	
C5	renal in-pt	yes	yes	yes	
C6	renal out-pt	yes	yes	yes	
C7	urology	no	yes	no	
SpR 1	ITU direct care	no	no	no	
SpR 2	ITU direct care	no	no	no	
SpR 3	renal in-pt	no	yes	no	tracheostomy
CT2	surgery	no	no	no	
FY1	medicine	no	no	no	

renal in-pt: 25 urgent surgical cases performed			
Proning: 75/167 patients required proning for refractory hypoxaemia			
Dialysis shifts: for 60% sickness/absence rate from dialysis staff			
Tracheostomy: 20/50 patients undergoing tracheostomy were performed by C1/SpR3			
Training: 170 staff underwent simulation training overseen by C2			
Supervision of 15 students /newly qualified doctors: by C2 to manage different ITU projects			
Complex vascular: 12 major cases at outreach hospitals (RNOH, GOSH, Princess Grace)			

Conclusion: During the pandemic transplant surgeons played essential roles in supporting our renal patients and the wider hospital including leadership, training, development and direct patient care. We believe that our ability and willingness to adapt, our plethora of technical and non-technical skills and focus on patient-centred care was a real asset during the crisis.

P144

Flooding theatre: reducing water wastage during transplant surgery

Dr Jasmine Virk[1], Mr M. Huttman[2], Mr B. Turner[2], Mr John Fallon[1], Mr Tarik El Jichi El Mutassem[1], Ms Anusha Edwards[1]

[1]North Bristol NHS Trust, Bristol, United Kingdom. [2]University of Bristol, Bristol, United Kingdom

Introduction: The climate crisis poses one of the biggest challenges of modern times, with healthcare representing around 4.4% of global net emissions. [1] The WHO recommends that scrubbing prior to surgical procedures should take between 2-5 minutes.[2] The majority of this time is spent sequentially disinfecting the hands with soap/sponges/picks with minimal time spent rinsing under water. Despite this, water is often left running between scrubs. This results in large volumes of water wasted and excess carbon emissions.

Methods: This project aimed to quantify the environmental and economic costs of water wastage during scrubbing at a large tertiary care and transplant centre in North Bristol NHS Trust. In the preliminary audit 10 practitioners from across the transplant team were observed scrubbing prior to procedures and the volume of excess water wastage between scrubs was calculated (Litres). An intervention (printed and electronic poster) was implemented across theatres to encourage practitioners to use their elbow to turn off the taps between scrubs. Following this, the volume of excess water wastage was then re-audited.

Results: The average volume of water wasted per scrub decreased from 15.3L to 3.42L. This translated to a saving of 1.36 million litres of water per year across all theatres. This would save approximately 405.28kg of CO_2 emissions per year. No episodes of observed desterilisation resulted from this intervention.

Discussion: It is possible to maintain sterility and reduce water wastage by turning off the taps using the elbow between scrub cycles. This does not require the modification of theatre infrastructure and has substantial environmental and economic benefits. 'Silent scrubbing' also reduces noise in theatre, particularly during briefings, which has beneficial patient safety implications. It is a simple and reproducible intervention that can help the NHS reach its net carbon zero target.

P145

Innovation in a virtual world

Miss Sonya Paterson[1], Mrs Claire Roberts[2], Mrs Cathy Miller[2], Mrs Louise Hubner[2]

[1]NHS Blood and Transplant, Newcastle Upon Tyne, United Kingdom. [2]NHS Blood and Transplant, Birmingham, United Kingdom

Introduction: NHS Blood and Transplant's Legislation Change team (LCT) working within a project framework had considered innovative and creative ways to build, test and deliver education and training by embracing technologies that could be transferred, where appropriate, into the virtual environment. Normal change management processes to consider innovative ways to deliver training gave way to enforce changes by the COVID-19 pandemic, however, there has been a positive response from some of the workforce who appreciated not needing to travel to attend training.

Methods: The restrictions social distancing and travel restrictions imposed by the COVID-19 pandemic required the LCT implementing Legislation Change education to the Specialist Nurse (SN) workforce gave opportunity to the application of virtual technologies. The LCT spent many hours converting planned training into interactive sessions to be delivered via a virtual platform, ensuring sharing practice and participation was still possible.

Results: Comparisons of a module that had commenced face to face then was converted to a virtual module were as expected, the virtual module evaluated slightly lower overall (8.3/10) than the face to face module (9.1/10) (Miller, et al; 2020). Under the extreme circumstances of a global pandemic, staff redeployment, a change in practice and the inexperience of educators in designing and delivering virtual education, this could be considered a good evaluation.

Discussion: Topol (2019) recommends NHS educators use virtual training as a way to engage with staff and give easy access to the training opportunities. As the SN workforce works across the whole of Great Britain, finding ways to reduce travel costs, excessively long days travelling and maintaining the opportunity to share practice with colleagues whilst continuing engagement and innovation should continue to be explored.

P146

The Mirror Model – using DonorPath technology for real life learning with specialist nurses in organ donation

Ms Helen McManus

NHS Blood and Transplant - Education and Professional Development, Southampton, United Kingdom. NHS Blood and Transplant - Northern Ireland Organ Donation Services Team, Belfast, United Kingdom

Introduction: Learning "on the job" with real-life cases for trainee specialist nurses/requestors in organ donation (SNODs/SRs) can vary depending on trainee numbers, geographical location and donation activity. Reduced exposure can affect confidence and extend training periods which has financial/operational implications for the organisation and wider NHS, with this in mind I created the "Mirror Model"

Methods: Trainee SNODs/SRs not physically present at real-life cases mirror this experience virtually, supported by an experienced SNOD/SR or professional development specialist to support education, learning and critical thinking skills. Trainees virtually follow the organ donor case in real-time primarily on DonorPath which is an intuitive application that digitised paperwork for organ donation. The Mirror Model provides a structure for this technique which guides users and supporters with recommendations to prevent emotional overload when following organ donors. Training in the models' use ensures the Mirror Model is introduced and used in a consistent manner.

Results: This training method has been positive from a qualitative and quantitative perspective. SNOD quote "I could reflect on the use of communication lines, processes involved, issues that arose and the strategies used to deliver the safe and high-quality care and service to donors, their families, recipients and the wider organisation and multidisciplinary teams". Using this model has reduced the training period and therefore provides financial/operational benefits for the organisation and wider NHS.

Figure 1 shows data from a regional organ donation services team

	Trainee no's	Training period Start to on call sign off	Mirror Model information
3	2	6 – 7 months	Pre Mirror-Model
4	2	9 months	Pre Mirror-Model
7	1	8 months	Pre Mirror-Model
9.5	2	8 months	Model introduced near end of training
11	3	5 – 6 months	Mirror model in use
12	1	< 6 months	Mirror model in use
13	3	Training in progress- 2 trainees on track for 5 months sign off, 1 trainee excluded	Mirror model in use

Discussion: The Mirror Model is in its infancy and has been adapted to improve the educational support required for regional needs and led to other training initiatives. These benefits have become even more important during the COVID pandemic when real-life learning experience maybe reduced due to a reduction in donor activity. The method is greatly advantaged by the DonorPath technology making this possible.

P147

Strengthening medical education in paediatric and infant organ donation

Mrs Jill Featherstone

NHSBT, Newcastle, United Kingdom

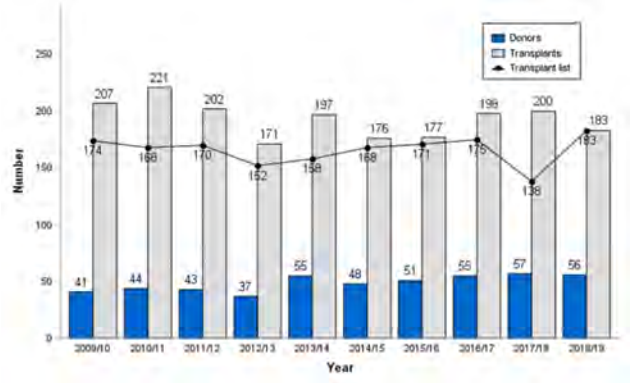
Introduction: The primary focus of the Paediatric and Neonatal Donation 5-Year Strategic Plan 2018–2023 is to significantly improve rates of paediatric donation in the UK. NHSBT's appointment of a national nurse and clinical lead for both paediatric organ donation and medical education, gave an opportunity to collaboratively address the associated strategic educational requirements to achieve this.

Case presentation: With only 2 established one day courses in existence, and little clarity over any additional locally delivered medical education that could support new paediatric leads for organ donation (PCLOD), yet to be fully established in all units, or trainees making PICU or neonatology their career, work to ensure an inclusive, co-ordinated and collaborative approach across the NHSBT medical education programme was essential.

Outcome: All NHSBT medical education courses were updated, with particular attention given to the National Deceased Donation Course (NDDC), as it provides a condensed foundation and simulated experience of best practice guidance. A new course, designed to complement and build on the NDDC opportunity, was launched; its development assisted by a neonatal trainee. It concentrated on leadership, the specifics required of the strategy and was strongly rooted in interdisciplinary learning. A national template for local courses is now in development, for use by PCLODs to support consistent, quality, localised training.

Discussion: To achieve confidence, higher consent rates and the cultural norm of paediatric and infant donation, strengthening the medical educational opportunities for this group is essential if leadership in normalising organ donation when a child or infant is dying is to be widely accepted and achieved. Grounding training in an interdisciplinary and collaborative approach, benefits this aim

Number of deceased paediatric (less than 18 years) donors, transplants and active transplant list in the UK, 1 April 2009 – 31 March 2019



P148

A regional organ donation committee – a new direction

Mrs Susan Duncalf[1], Mr Gordon Crowe[2], Mrs Sarah Whittingham[3], Mrs Clare Jones[2], Mr Andrew Davidson[2], Dr Helen Buglass[4], Mr Malcolm Rogers[5], Dr Alison Ingham[6], Dr Chris Booth[7], Mr Peter Morton[8], Mrs Dawn Lee[8], Mrs Nicola Hargreaves[1], Ms Jane Monks[1], Ms Emma Thirlwall[8], Dr Simon Flood[9], Dr Ascanio Tridente[8], Ms Jenny Hughes[3], Mrs Lisa Francis[1]

[1]NHSBT, Manchester, United Kingdom. [2]NHSBT, Sheffield, United Kingdom. [3]NHSBT, Barnsley, United Kingdom. [4]NHSBT, Wakefield, United Kingdom. [5]NHSBT, Bradford, United Kingdom. [6]NHSBT, Bangor, United Kingdom. [7]NHSBT, Salford, United Kingdom. [8]NHSBT, Liverpool, United Kingdom. [9]NHSBT, Leeds, United Kingdom

Introduction: Recommendation 4 of Organs for Transplant, a report from the Organ Donation Task Force 2008 identified the requirement for every Trust to have an Organ Donation Committee (ODC). It's purpose was to ensure that organ donation is a usual, not an unusual event and that local policies, constructed around national guidelines, should be put in place. Over the last 12 years, the ODCs have helped to drive best practice and foster change and have achieved significant improvements in practice and outcomes.

Method: The North West and Yorkshire teams have advanced the ODC by formulating Regional Organ Donation Committees (RODC). The RODCs are represented by the Regional Manager, RCLOD, Education CLOD, Professional Development Specialist and the Team Managers with oversight from the Regional Chair. The vision of the RODCs is to build upon the work of the collaborative and to develop a local strategic plan for best practice and improvements, drawing upon the expertise across the regions. The key objectives are to enhance communication between National, Regional and local ODCs and to provide support for local ODC chairs in their leadership roles.

Outcome: Formulation of a more strategic and collaborative regional approach to donation has been achieved with the establishment of the Regional Organ donation committee.

Discussion: Through increased liaison and cooperation, the goal is to achieve greater consistency, to reduce duplication and to improve performance. It is envisaged that the RODCs will develop over time and have ambitions to support development and research opportunities across the regions as well as expanding the outreach capabilities and potential through a media strategy and integration of the Ambassador programme. This is a model that could be adopted across the UK.

P149

Donor satisfaction with "Attend Anywhere" virtual live donor clinics during Covid-19 crisis

Caroline Basarab-Horwath[1], Debbie Butlin[1], Veronica Lennon[1], Lisa Hamilton[1], Kevin Firth[2], Ceris Harrison[1], Dr William McKane[1], Mr. Ravi Pararajasingam[1], Mr. Yazin Marie[1]

[1]Sheffield Kidney Institute, Sheffield, United Kingdom. [2], Sheffield Kidney Institute, United Kingdom

Introduction: At the start of the national lockdown of Covid-19 crisis, elective live kidney donor consultations were cancelled. A video consultation clinic, "Attend Anywhere" (AA), was started in our centre during the Covid-19 crisis to avoid delays in care. As it is a brand new experience, we wanted to hear donors opinion about this clinic.

Methods: An online questionnaire was sent to potential live kidney donors.

Results: The reason for attendance was either a live donor coordinator assessment (46%), receiving results from the surgeon (31%) , attending transplant school(15%) or initial donor assessment (8%). The majority of donors were in the age range of 41-60 year and rated AA up to 10/10 (median=93.5). 77% thought that AA was either better or the same as the as the face-to-face consultation (FFC). They thought it is a safer option and were very happy that they did not have to travel(69.2%). Hearing and seeing during AA was fairly easy(61.5%) or very easy(38.4%) and the majority felt completely involved as they wanted to be in decisions and discussions about their care to the degree that only 23% would prefer the next appointment to be FFC.

Discussion: Personal interaction is extremely important while caring for patients. However, during the Covid-19 crisis, this had to be weighed against the risk of contracting the virus as well as the availability of staff to run these clinics. AA was adopted and proved to be an effective alternative in most settings. Our donors preferred it not only because it was safer, but also to avoid travelling (up to 3 hours according to one donor). It could represent an alternative to FFC as far as it doesn't compromise patient's care. Further cost-effective analysis might support this argument.